

Version
2.0.31



NaViSet Administrator 2

User's Guide

Software Updates

Occasionally updates and enhancements to the *NaViSet Administrator* software will be made available. Use the *Check for updates* feature in the software to automatically see if a newer version is available (Internet connection required).

Technical Support and Feedback

For technical support with *NaViSet Administrator*, please check for any Frequently Asked Questions that may help to solve the issue. For additional help, please contact your NEC representative, or use the online feedback forms available at www.necdisplay.com/navisetadministrator in the US and Canada, and www.nec-display-solutions.com/naviset in Europe.

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USA and Canada: www.necdisplay.com/navisetadministrator

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Precautions:

- *NaViSet Administrator* allows many advanced display features and settings to be changed and reset. Care should be taken when making any adjustments to avoid mis-adjustment.
- The Windows computer controls in *NaViSet Administrator* allow a remote computer to be shut down and restarted without giving any warning to the currently logged in users. Unsaved files may be lost as a result. Extreme care should be taken when using these controls.

 **Note:** This document is intended to be used together with the User Manual for each display model, and is not intended as a substitute. Please see the display's User Manual for descriptions of how to use each control.

Supported Display Monitors

NaViSet Administrator supports the following NEC display models:


- NEC desktop display models.
- NEC large-screen display series: X, P, V, S, and LCDxx20.
- NEC E series of large-screen display models with a built-in LAN connection.
- NEC projector models with a LAN or RS232 connection.

 **Note:**

- NEC NEC E series of large-screen display models without a built-in LAN connection are not supported.
 - Please see the NEC website for the latest listing of specific models.
 - Supported features and functionality will depend on model.
-

System Requirements

NaViSet Administrator has the following system requirements:

	 Microsoft Windows
Operating System	32 and 64 bit versions of Microsoft Windows XP, Server 2003, Vista, Windows 7, and Windows 8.
LAN	Standard TCP/IP LAN interface. Static IP addresses required for most displays connected directly to LAN, unless name resolution (hostname) support is provided.
System Resources	<p>At least 64MB available hard-disk space for installation.</p> <p>Approximately 50MB per 100 devices hard-disk space required for database storage.</p> <p>At least 96MB RAM (192MB recommended)</p>
Software	<p>Adobe Reader X or higher is recommended for viewing the User's Guide.</p> <p>Open Hardware Monitor (optional) for monitoring computer temperature and fan status. See Appendix C on page 140 for details.</p>

Chapter

1

Introduction to NaViSet Administrator

Introduction

NaViSet Administrator is a network based control and asset management system for NEC display monitors and projectors. It supports the asset reporting, monitoring, and control of the following types of displays:

- **Desktop displays connected to a networked Windows computer via a standard video connection such as VGA, DVI, or DisplayPort.**
- **NEC large-screen displays connected to a LAN via the built in LAN connection.**
- **NEC large-screen displays connected to a networked Windows based computer via RS232.**
- **NEC projectors connected directly to a LAN via the built in LAN connection.**
- **NEC projectors connected to a networked Windows based computer via RS232.**

The *NaViSet Administrator* application is designed to run from a central location and provides monitoring, asset management, and control functionality of remote displays and Windows computers. It can be run continuously to provide automatic monitoring and control of devices with the use of automated tasks and alerts that can be run manually or set to run at specific times and intervals.

The application provides controls for accessing and adjusting many of the controls and settings on the various types of supported displays. Most controls available via the *On Screen Display* (OSD) of a display monitor are available via the *NaViSet Administrator* application. These controls can be adjusted interactively, or be made to perform customized operations at specific times via the use of *Tasks*. This allows very powerful automation function to be easily performed.

Tasks are operations that can query or perform commands one or more devices, and can be scheduled to run at particular times, or on demand, and also to continue running for a specific period of time and interval.

Tasks can be used to perform conditional queries on devices, which can in turn be used to provide alerts for abnormal conditions or events. Notification emails can be automatically sent to multiple recipients in the event of an alert condition.

Custom Reports of all of the connected devices can be created that contain information about each device and their configuration, and settings.

Features

Communications

Communications with the display devices is achieved either via the built in LAN connection (available on most large-screen and projector models), or via a host Windows computer that acts as an interface between the connected displays and the network.

For desktop display models, communications with the display is performed using the existing video signal cable connection to the host Windows computer via an interface called DDC/CI.

i Info: **Display Data Channel - Command Interface** (DDC/CI) is a two-way communications link between the video graphics adapter and display monitor using the standard video signal cable. No extra cables are necessary. Special support is required in the video graphics adapter hardware and video driver in order to provide this functionality. DDC/CI is an industry standard developed by VESA (Video Electronics Standards Association).

Large-screen and projector models can communicate via a host Windows computer using an RS232 connection to the computer. Most large-screen display models can also be daisy-chained via RS232, allowing multiple displays to share a single LAN connection.

See “Configuring Devices” on page 45 for a complete description of each of the different supported connection types and configurations.

Adding Devices

Display devices and Windows computers can be easily added to the NaViSet Administrator database using a variety of different methods.

- Windows computers can be added by querying an Active Directory Server, or enumerating the Windows network.
- Any type of device can be imported from a list in either a delimited text file, or Excel spreadsheet, as well as from another NaViSet Administrator file.
- Many projector models can be automatically detected on the network.
- Devices can be added by specifying an IP address range.
- Devices can also be added one at a time by entering their host names or IP addresses

Database

NaViSet Administrator uses a database to store information about all of the remote devices, access credentials, operation history, and logging information. The databases for different projects and networks can be loaded, saved, and can be transferred between different computers.


As devices are added and queried, the information gathered for each device is automatically stored in the internal database. The application includes database query functionality to generate reports about the devices. For example at the most basic level it can be used for asset tracking, such as compiling a list of the model names and serial numbers of displays. This can be expanded to include more information, such as the number of hours each display has been in use, the carbon savings and energy cost, and even the non-volatile Asset Tag string stored in each device.

Reports can be exported to Excel or delimited text files to facilitate the easy transfer of data for use with other applications.

Advanced Computer Monitoring and Control

For displays that are connected to a Windows computer, NaViSet Administrator can gather useful information about the computer and even control the computer power state. For example the computer make, model, serial number, available memory, OS version, CPU type, usage, and many more parameters can be collected and reported. A computer can even be restarted, shut down, and woken remotely from within the application. These operations can be scheduled to occur at specific times or intervals.

NaViSet Administrator supports the popular *Open Hardware Monitor* application, to gather additional useful information about a remote computer such as the internal main-board, CPU, and GPU temperatures and fan speeds. These parameters, just like any other monitor related parameter, can be used to create a conditional alert to inform an administrator of an abnormal situation, such as overheating or fan failure. These alerts can be notified by displaying an alert condition within the application, or by sending out a notification e-mail.

 **Note:** Remote display and computer devices do not broadcast events back to the NaViSet Administrator application. All information is acquired by polling the device. Therefore alert conditions are discovered by periodically polling devices to query their condition.

Speed

In order to achieve a high operational speed when performing multiple operations on different remote devices, operations to different devices are performed in parallel. The software supports multiple simultaneous network connections to different devices, and operations are automatically queued and performed as soon as a connection is available. The maximum number of simultaneous network connections can be configured in the *Preferences* settings.

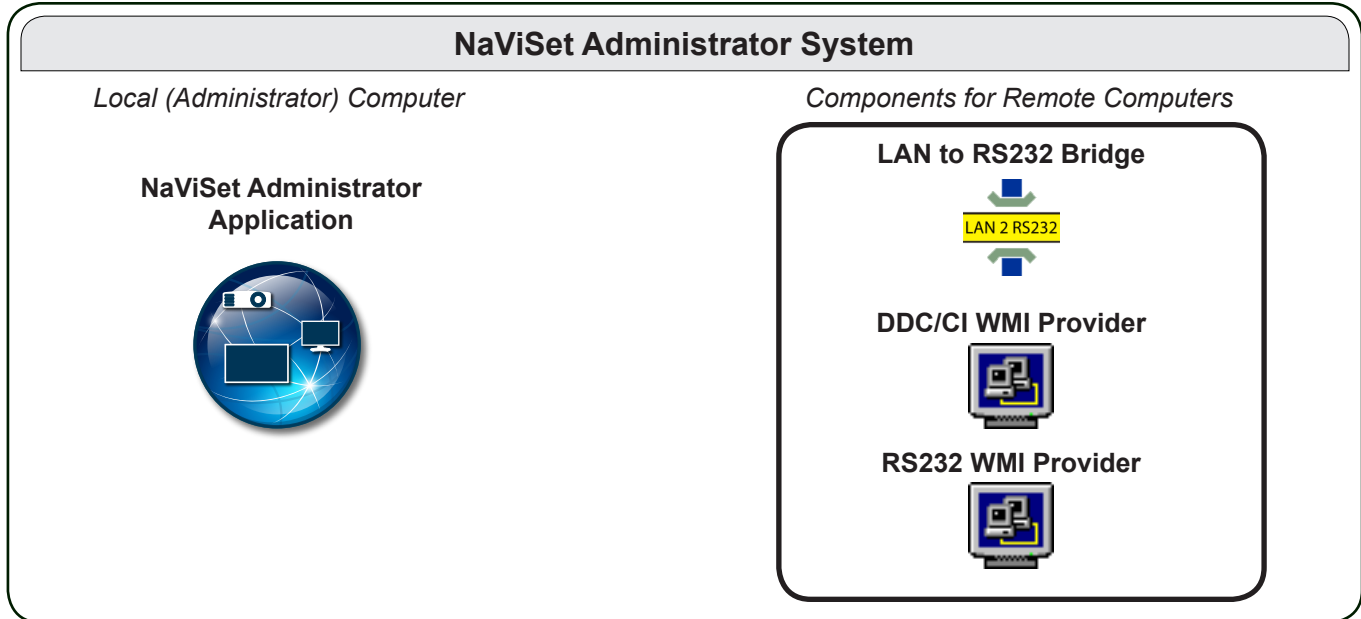
Benefits of using NaViSet Administrator

Some of the benefits of using NaViSet Administrator are:

- Unified support for NEC desktop displays, large-screen displays, and projectors, as well as Windows computers and non-NEC desktop displays.
- Reduction in technical support times and costs by accessing configuration settings for displays remotely over the network, allowing many problems to be diagnosed and corrected without having to physically access the device.
- Reduction in total power consumption by providing remote power management functions in order to turn displays on or off. This feature can be fully automated so that the power state for multiple displays can be controlled at specific times of the day.
- Settings and parameters can be read directly from a display, thus providing detailed information about the display and its usage, such as its current settings and status. For example the total time that a display has been powered on, or in a power saving mode, can be read and compiled into a report along with many other items such as the model name, serial number, and date of manufacture.
- Powerful asset management with the use of an electronic Asset Tag that allows a text string to be permanently stored within the display's memory. This text string could, for example, be a conventional asset tracking code, company name, department name, phone number etc. This can then be read by NaViSet Administrator and used for asset tracking over a network. It can normally only be altered or erased with the use of NaViSet Administrator, thus providing a more secure method of asset tracking than conventional physical asset tags.
- The current setting values of all of the available controls in a display can be read, stored in the database, and reported, thus providing a convenient snapshot of the configuration of each display.
- Configuring the settings in multiple displays to a standard can be done easily by creating a task with the required setting values, thus providing a simple way to deploy a large number of displays with a standard set of settings.
- Unauthorized or unintended adjustment of display monitors can be reduced by disabling the On Screen Display (OSD) control buttons on a display.
- Alerts conditions can be automatically generated if a parameter on a device goes outside a specified range or value. For example an administrator can be notified via email if a projector's lamp is reaching the end of its operational lifetime, or has failed.
- Basic information about displays connected to Windows computers via standard video connections such as VGA, DVI, and Display Port, can be read even without installing any additional software. This includes the make, model, serial number, resolution and date of manufacture. The computer can also be shut down, restarted, and a Wake-on-LAN command issued.
- By installing the included *DDC/CI WMI Provider* on a Windows computer, more detailed information about all connected displays can be read. Additionally, two-way control of NEC displays is available via standard video connections such as VGA, DVI, and Display Port.
- *Proof Of Play* events can be read from supported large-screen displays, allowing detailed logging of events that may impact the video or audio output of the display such as loss of signal, or a change in video input selection.

Installing NaViSet Administrator

The NaViSet Administrator system includes the necessary remote software components to facilitate the various connection methods to different devices. These components are included on the install media and are available from the auto-run menu system, or by running the corresponding setup application directly.




NaViSet Administrator application: The main application should be installed on the administrator's computer, and will store all of the configuration and information gathered from the various remote devices in a local database file.

Components for Remote Computers

LAN to RS232 Bridge: Is a utility that provides two-way communications via LAN to NEC large-screen displays or projectors that are connected to the remote computer via an RS232 connection. See Appendix D on page 142 for more information.

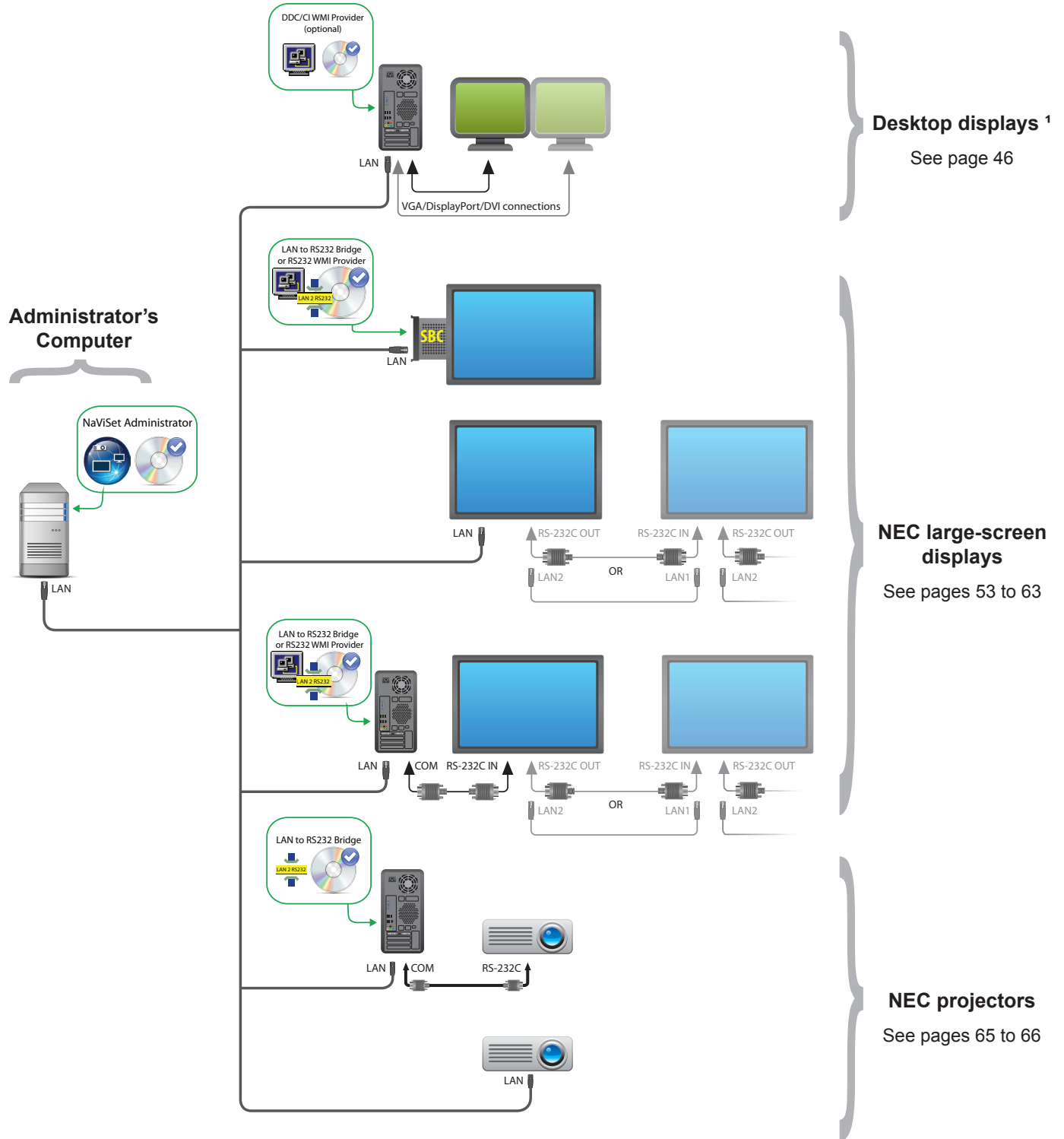
DDC/CI WMI Provider: Provides two-way communications with displays connected directly to a Windows computer. See "Desktop display(s) connected to a Windows Computer" on page 46, and Appendix F on page 148 for more information on WMI Providers. This installer can be run in silent mode using the command line `setup /S`.

RS232 WMI Provider: Provides an alternate method of two-way communications with NEC large-screen displays connected to a Windows computer via an RS232 connection. See Appendix A on page 137 for a comparison of the various connection methods for large-screen displays and the features and benefits for each. See also Appendix E on page 145 for information on configuring settings used by the RS232 WMI Provider.

 **Note:** Please see the README files included with each component for detailed information on the system requirements and configuration settings.

Configuration Overview

The following diagram shows the basic different configurations of devices supported by NaViSet Administrator and the related components that must be installed.



¹ Includes limited support for NEC large-screen displays. See Appendix A on page 137 for details.

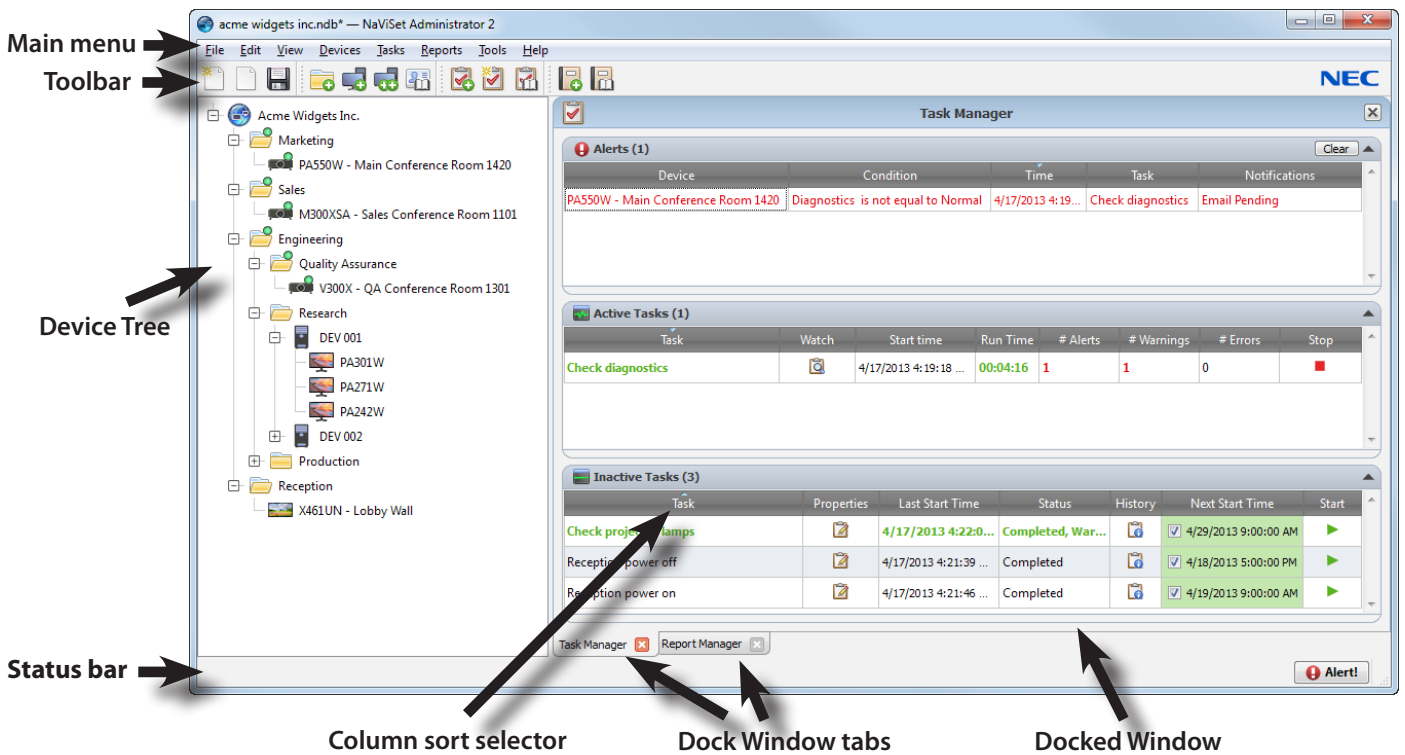
Chapter
2

User Interface Overview

Main Window:

The main application window is divided into a *Device Tree* on the left and a *Dock Window Area* containing dock windows on the right. Multiple dock windows are stacked on top of one another and tabbed so they can be easily identified and selected.

By default NaViSet Administrator opens with two dock windows, *Report Manager* and *Task Manager*. There are several other types of function-related dock windows that use this area and all are described in the appropriate sections of this document.



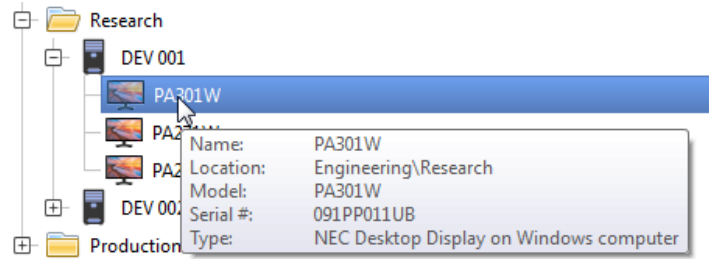
A toolbar at the top of the main window provides convenient shortcuts to many of the functions. See “Menus” on page 22 for a description of each, or mouse over the toolbar icons to see the tooltip descriptions.



A status bar at the bottom of the main window shows descriptions of menu items when selected. If enabled in the application *Preferences*, the status bar also shows information about connections to devices that are currently being processed and waiting to be processed. See “General Settings” on page 110 for more information.

Device Tree

The Device Tree on the left of the main window represents all of the displays and computers that are in the current database. Extra information on each device in the tree is shown in tooltips, which can be seen by mousing over each item.

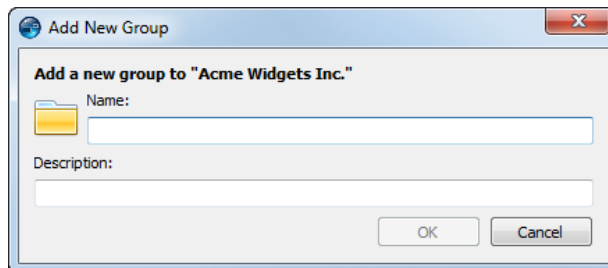


Note: The NaViset Administrator application's User Interface can be displayed in English, German, French, Japanese or Chinese (Simplified). The default language will be selected automatically based on the computer's language settings. The language can be changed via the "Language" page in the "Preferences" dialog. See "Language" on page 115 for more information.

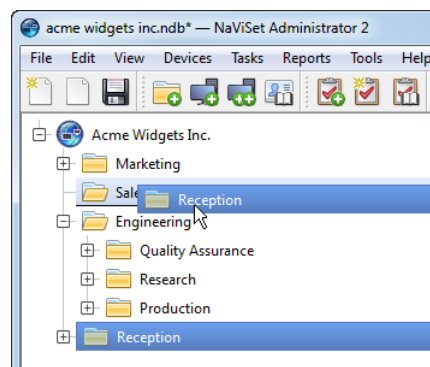
Groups

Devices can be grouped to help organize collections of displays and computers, such as physical location (for example by building and floor), or organizational groups (for example "Sales" and "Marketing").

Creating Groups: Groups can be created by either selecting **Add Group...** from the **Devices** menu, or by right-clicking in the Device Tree and selecting **Add Group...**. Groups will be added as a new branch directly under the currently selected item in the Device Tree.

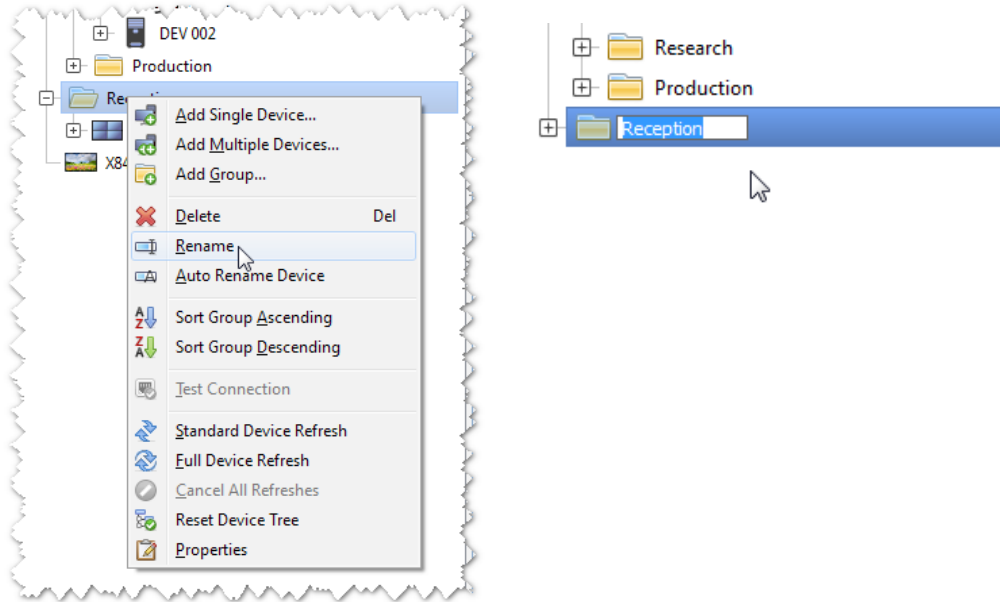


Rearranging Groups: Groups can be rearranged by clicking and dragging a Group's folder icon to another part of the Device Tree.



Renaming Groups: Groups can be renamed by either:









- Double-clicking the group in the Device Tree
- Right-clicking a group in the device tree and selecting Rename.
- Selecting Rename from the Edit menu while the group to be renamed is currently selected.



Expanding Groups: Groups can be expanded and collapsed by clicking the  icon next to the group name.

Devices





Each device in the Device Tree is represented by an icon as shown in the following table:

Icon	Description	Default Device Name Format
	Windows computer	Host name
	NEC desktop display connected to a Windows computer	Model name - Asset tag or Serial number *
	NEC medical display connected to a Windows computer	Model name - Asset tag or Serial number *
	Read-only Display: A display connected to a Windows computer with read-only connection (DDC/CI not available) or a non-NEC display	Model name - Serial number
	Single NEC large-screen display	Model name - Asset tag or Serial number *
	Daisy chain host: A virtual device for daisy-chained NEC large-screen displays. See page 28 for a full description.	Daisy Chain Host
	NEC large-screen display connected in a daisy chain	Model name (ID monitor ID)
	NEC projector	Model name - Asset tag

* Large-screen displays and desktop displays are shipped with no asset tag set. Whenever the asset tag is blank, the serial number will be used.

Device Connection Status

The status of the network connections between NaViSet Administrator and devices can exist at different levels, and are shown in the device tree using the following indicators:

Connection Status	Icon	Description
Normal		The device has a valid connection. The database contains the information about the device needed to fully control it.
Confirmed		The device has a valid connection, but the database does not yet contain the information needed to fully control it. A Standard Refresh will be required to change the device to Normal status.
Unconfirmed		Not an actual device, but a temporary placeholder for one consisting of a proposed device type and IP address or host name. A Standard Refresh will be required to confirm the device and change it to Normal status.
Changed		A normal device whose connection information was recently updated due to changes made to the network settings in the device or changes to the LAN.

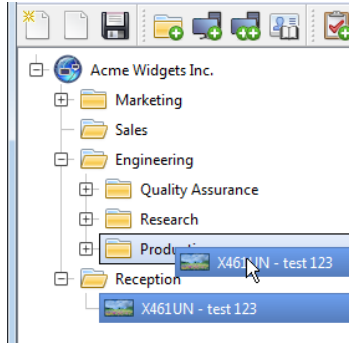
Device Communications Status

Indicators on the icons represent certain states of the devices the last time they were accessed. Current and pending device activity is shown using various tree branch animations. The following table shows the various indicators:

Communication Status	Device Indicator	Containing Group Indicator	Description
None			No activity between the device and the system since the database was opened.
Operation Pending	 Pulsating yellow dot		An operation requested by the system has been placed in a queue until a connection slot becomes available.
Connection Retry Pending	 Pulsating yellow and blue dot		The previous attempt to connect to the device was unsuccessful. The system is waiting a specified time before re-submitting the operation request into the queue.
Opening/Sending	 Blue dot moving toward device		The system is in the process of establishing a connection and changing control settings in the device.
Opening/Receiving	 Blue dot moving away from device		The system is in the process of establishing a connection and reading information from the device.
Closed/Success			The last operation between the system and the device was successful.
Closed/Canceled			The last operation was canceled by user. The group icon takes precedence over Success status.
Closed/Power State Warning			The last operation may not have completed successfully due to an unknown power state condition. The group icon takes precedence over Canceled status.
Error			The last operation failed. The group icon takes precedence over Warning status.
Refreshing	 P463 - East Wall Busy progress indicator -green		A standard device refresh or a full device refresh is in progress.
Refresh canceling	 P463 - East Wall Busy progress indicator -red		A standard device refresh or a full device refresh is in the process of being canceled.

Adding Devices: Devices are added to the Device Tree by using either the **Devices** menu, or right-clicking an item in the device tree and selecting either **Add Single Device...** or **Add Multiple Devices...** See page 25 for how to add different devices.

Rearranging Devices: A device can be moved between different groups by clicking the device and dragging it onto a different folder.



Renaming Devices: Devices can be renamed by either:

- Right-clicking on the device in the device tree and selecting **Rename**.
- Selecting **Rename** from the **Edit** menu while the device to be renamed is currently selected.

Note: Changing the **Asset Tag** portion of the device name in the tree will not change the **Asset Tag** stored in the display. To change the Asset Tag of the display, select **Asset Tag** from the **Display Device Information** list group in the controls shown in the Custom tab of the Device Properties window.

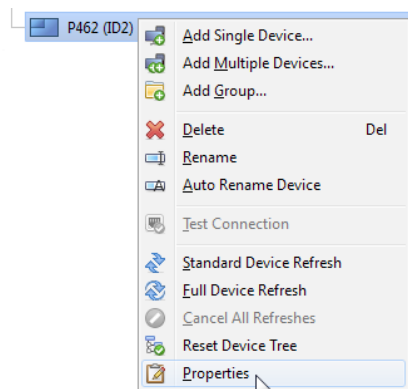
Automatically Renaming Devices: One or more devices can be renamed at a the same time automatically using the default device name format (described in the “Devices” table on page 16).

To rename one or more devices automatically, select the devices, or the groups containing the devices, and either:

- Right-click on one of the selected items and select **Auto Rename Device**
- Select **Auto Rename Device** from the **Edit** menu

The devices selected that require renaming will be highlighted and a message will be displayed asking for confirmation.

Opening a Device Properties Window: Double-clicking a device in the device tree will open the device’s properties window in the dock window area. The device properties window can also be opened by right-clicking the device and selecting **Properties** from the context menu.



There is no limit to the number of device properties windows that can be opened and docked at the same time.

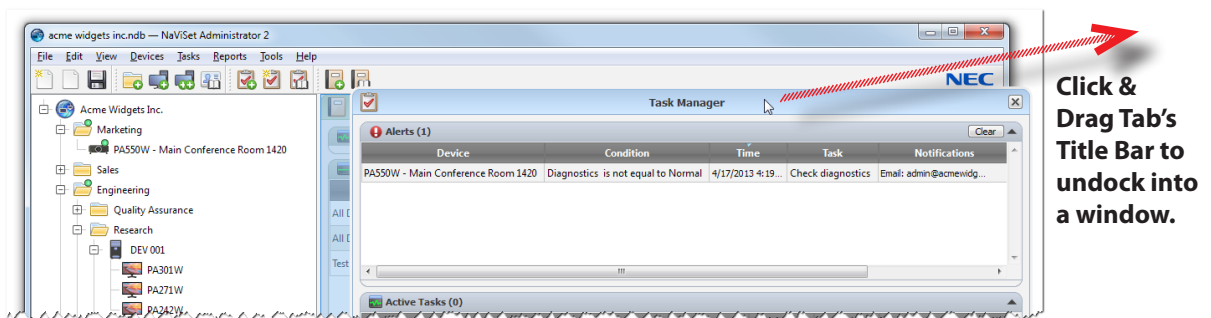
Dock Window Area



The dock window area on the right side of the main window can contain any number of Dock Windows. By default, NaViSet Administrator opens with two docked windows, *Task Manager* and *Report Manager*. Examples of other dock windows are *Device Properties Windows* and the *Task History Viewer*.

Device Properties Windows are opened by either double-clicking a device icon in the device tree, or right-clicking a device and selecting *Properties* from the menu.

Docked windows can be moved outside the dock window area by double-clicking on the title bar, or moved to anywhere on the desktop by clicking and dragging the window's title bar. Windows that are no longer docked are called floating windows. Floating windows can be moved back into the dock window area by double-clicking on the title bar, or by clicking and dragging the title bar to move the window over the dock window area.

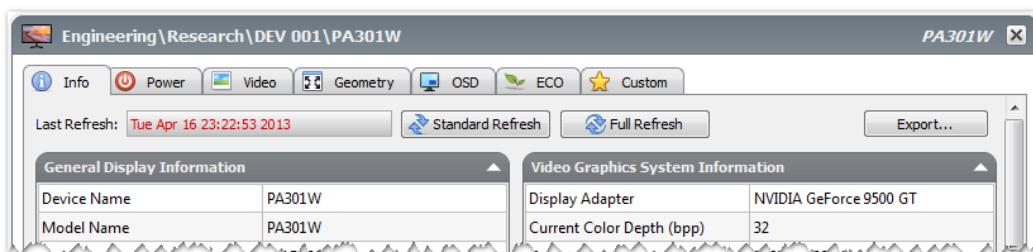
The ability to move dock windows to anywhere on the desktop provides a lot of flexibility, maximizes efficient use of the available desktop, and allows individual items to be given prominence on the desktop if desired.



Docked windows can be closed by clicking the  button on the tab list, or the  button in the dock window's title bar. Both docked windows and floating windows can be hidden or shown by selecting them from the **View** menu.

Device Properties Window

Each Device Properties Window consists of a series of tabs which divide the device information, network settings and numerous controls into logical categories, similar to those in the device's OSD (On Screen Display).



The number and types of tabs that appear for a device will depend on the capabilities of the device. Controls on the tabs allow changes to be made to the device settings in real-time. Most frequently used controls are shown on individual tabs such as **Video**, **Audio**, and **Power** etc. More infrequently used controls are available on the **Custom** tab.

See "Controlling Devices" on page 68 for a complete description of the device property tabs.

Task Manager Window

The *Task Manager* window shows:

- Tasks that are currently inactive (not currently being processed/executed)
- Tasks that are currently active (being processed/executed)

- Any alert conditions that have occurred while running any tasks

See “Tasks” on page 76 for more information on Tasks and the Task Manager.

Report Manager Window





The *Report Manager* window shows:

- Inactive Reports that are not currently being run
- Active Reports that are currently being run












See “Reports” on page 103 for more information on Reports and the Report Manager.

Menus

File menu

-  **New** - Creates a new database file.
-  **Open...** - Opens an existing database file.
-  **Save** - Saves the current database file.
-  **Save As...** - Saves the current database to a different file name.






Edit menu

-  **Copy** - Copies data from the currently selected table to the Windows clipboard.
-  **Paste** - Not currently used.
-  **Delete** - Deletes the currently selected group or device in the device tree.
-  **Rename** - Renames the currently selected group or device in the device tree.
-  **Auto Rename Device** - Renames the currently selected devices and the devices in any selected groups using the default device names.
-  **Sort Group Ascending** - Sorts the devices and groups within the currently selected group in the device tree. Does not sort sub-groups.
-  **Sort Group Descending** - Reverse sorts the devices and groups within the currently selected group in the device tree. Does not sort sub-groups.
-  **Standard Device Refresh** - Performs a Standard Refresh on the currently selected device tree items.
-  **Full Device Refresh** - Performs a Full Refresh on the currently selected devices in the device tree.
-  **Cancel All Refreshes** - Cancels all Standard or Full Refreshes that are currently being performed on any devices.
-  **Properties** - Opens the *Device Properties Window* for the currently selected device in the device tree.








View menu

- Status Bar** - Hides or shows the status bar at the bottom of the main window.
- Toolbars** - Hides or shows the toolbar buttons.





Devices menu

-  **Add Single Device...** - Adds a new device to the database. See “Adding Single devices” on page 25.
-  **Add Multiple Devices...** - Adds several devices to the database. See “Adding Multiple Devices” on page 31.
-  **Add Group....** - Adds a new Group to the device tree. See “Groups” on page 15.
-  **Test Connection** - Tests the connection to a device to make sure it is accessible on the network.
-  **Credential Library...** - Opens the Credential Library. See “Credential Library” on page 74.

Tasks menu

-  **New Task...** - Creates a new Task. See “About Tasks” on page 76.
-  **Task Builder Wizard...** - Creates a new task using a wizard interface to guide.
-  **Task Library...** - Opens the Task Library. See page 77.
-  **Proof of Play...** - Opens the Proof of Play task properties dialog. See page 96.
-  **Show/Hide Alerts** - Shows or hides the Alerts list. See page 79.
-  **Show/Hide Active Tasks** - Shows or hides the Active Tasks list. See page 79.
-  **Show/Hide Inactive Tasks** - Shows or hides the Inactive Tasks list. See page 78.




Reports menu

-  **New Report...** - Creates a new Report. See “About Reports” on page 103.
-  **Report Library...** - Opens the Report Library. See page 103.
-  **Show/Hide Active Reports** - Shows or hides the Active Reports list. See page 105.
-  **Show/Hide Inactive Reports** - Shows or hides the Inactive Reports list. See page 104.

Tools menu

-  **Preferences** - Opens the application Preferences window. See “Preferences” on page 110.

Help menu

-  **Quick Start Guide** - Opens the NaViSet Administrator Quick Start Guide using the default PDF viewer. The Quick Start Guide will be displayed in the language NaViSet Administrator is currently using. See “Language” on page 115 for instructions on setting the language.
-  **User's Guide** - Opens this document using the default PDF viewer. The User's Guide is currently available in English only.
-  **Check for Updates** - Checks with the NEC software update system to see if a newer version is available. An Internet connection is required.
- About NaViSet Administrator 2...** - Displays the software and database version information.

Chapter 3

Devices

Supported Devices

NaViSet Administrator supports the following basic types of networked devices:

- Windows computers and connected display(s), both NEC and other manufacturers
- NEC large-screen displays
- NEC projectors

A more detailed description of each of these device types is given below.

Windows computers

A networked Windows computer that is using the WMI (Windows Management Instrumentation) protocol to communicate information about the connected displays. WMI support is built into Windows.

- See Appendix F on page 148 for a description of WMI.


This includes the following connections types:

- A Windows computer with one or more displays connected directly via VGA, DVI, HDMI, or DisplayPort. The included *DDC/CI WMI Provider* may be optionally installed to provide two-way communications with the displays. Any displays connected to the computer will automatically be detected and added to the device tree as branches from the computer device node.
 - See page 46 for details.
- A Windows computer with one or more NEC large-screen displays connected via RS232. The included *RS232 WMI Provider* must be installed on the computer.
 - See Appendix A on page 137 for a comparison of alternate methods of connecting large-screen displays.
 - See Appendix E on page 145 for more details on configuring the *RS232 WMI Provider*.
 - See page 59 for details on configuring the displays.

NEC large-screen displays


NEC large-screen displays using one of the following connection types:

- An NEC large-screen display that is connected via the built in LAN connection.
 - See page 54 for full details.
- An NEC large-screen display that is connected via the built in LAN connection, and is also daisy-chained to other large-screen displays via RS232 or LAN.


 **Note:** *Daisy-chained large-screen displays are added as a single device using Add Single Device in the Devices menu.*

- See page 54 for details on configuring the displays.
- An NEC large-screen display that is connected via RS232 to a Windows computer that is running the LAN to RS232 Bridge application.

- See page 55 for details on configuring the displays.
- An NEC large-screen display that is connected via RS232 to a Windows computer that is running the NEC LAN to RS232 Bridge application, and daisy-chained to other large-screen displays via RS232.

 **Note:** *Daisy-chained large-screen displays are added as a single device using Add Single Device in the Devices menu.*

- See page 55 for details on configuring the displays.
- An NEC large-screen display with an SBC (Single Board Computer) that is connected via the LAN connection on the SBC.
 - See page 55 for details on configuring the displays.
- An NEC large-screen display with an SBC (Single Board Computer) that is connected via the LAN connection on the SBC, and is also daisy-chained to other large-screen displays via RS232. The SBC is running either the *LAN to RS232 Bridge* application or the *RS232 WMI Provider*.

 **Note:** *Daisy-chained large-screen displays are added as a single device using Add Single Device in the Devices menu.*

- See page 63 for details on configuring the displays.

Projectors


An NEC projector connected to LAN using one of the following connection types:

- An NEC projector that is connected via the built in LAN connection.
 - See page 65 for full details.
- An NEC projector that is connected via RS232 to a Windows computer that is running the *LAN to RS232 Bridge* application.
 - See page 66 for full details.

Adding Devices

Devices can be added to the device tree either individually, or as multiple devices added simultaneously. When adding a large number of devices it is recommended to use the *multiple device* methods.


One exception is when adding multiple large-screen displays that are daisy-chained via RS232. In this case all of the displays are added simultaneously as one connection device, known as the *daisy-chain host* (see “About Daisy Chain Hosts” on page 28), and must be added as a single device.

 **Note:** *For the best results when adding devices, the computers and/or displays should be powered on. This will ensure all of the information that is necessary for NaViSet Administrator to provide full functionality is read and stored in the database.*

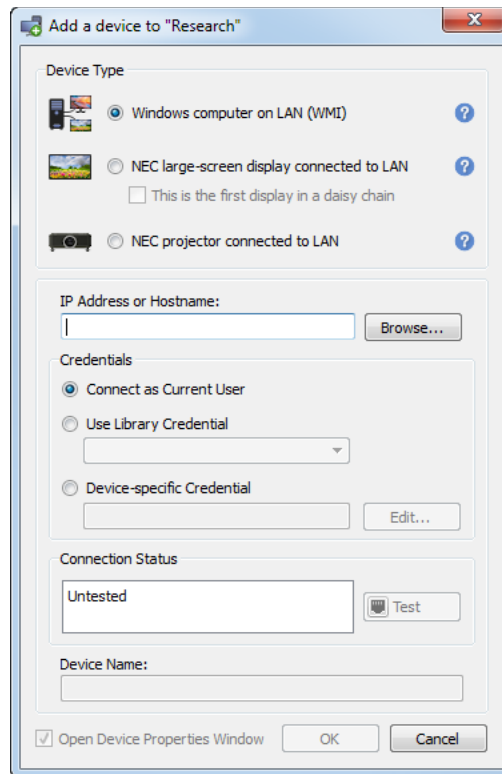
Adding Single devices

To add single devices to the device tree use either the **Devices** menu, or right-click an item in the device tree and select **Add Single Device...**, or click the  toolbar button. The **Add a device to** dialog will appear.

All devices added using this method must be powered on and accessible.

 **Note:** *Devices added using this method will be inserted in the first valid row below the currently selected item, indicated by the  icon.*

Adding a single Windows computer on LAN (WMI)



Select **Windows computer on LAN (WMI)**.

Enter the computer's network name or IP address, or click **Browse...** to view and select a computer currently available on the LAN.

Note: *It may take several seconds after clicking the **Browse...** button for the dialog to appear while the network is enumerated. Only computers that are currently available on the LAN will be shown.*

If you are currently logged in as a domain administrator and have credential access to the remote computer, then select **Connect as Current User**.

If the remote computer requires different credentials, then either select **Use Library Credential** if the credentials required have already been added to the **Credential Library**, or select **Device-specific Credential** to enter new credentials and optionally save to the **Credential Library**. See page 74 for more information on using the **Credential Library**.

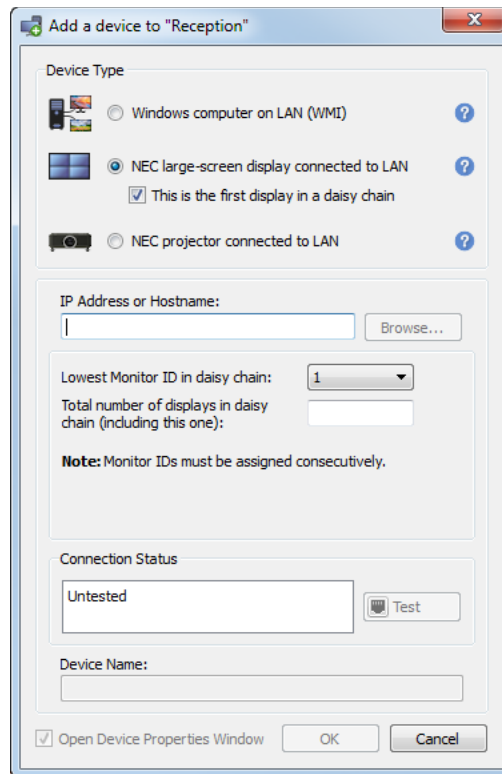
Click the **Test** button to confirm the network connection. If the connection is successful, then the computer's name will be automatically entered into the **Device Name**. The **Device Name** is the name used to identify the computer in the device tree, and can be edited if desired before it is added to the device tree, or later on by renaming the device in the device tree.

Click **OK** to add the Windows computer to the device tree. Any displays connected to the Windows computer will be detected automatically and added to the device tree under the computer node.

Troubleshooting

If an error occurred when performing the **Test** operation see the troubleshooting steps "Problem: Unable to connect to a Windows Computer via WMI" on page 135.

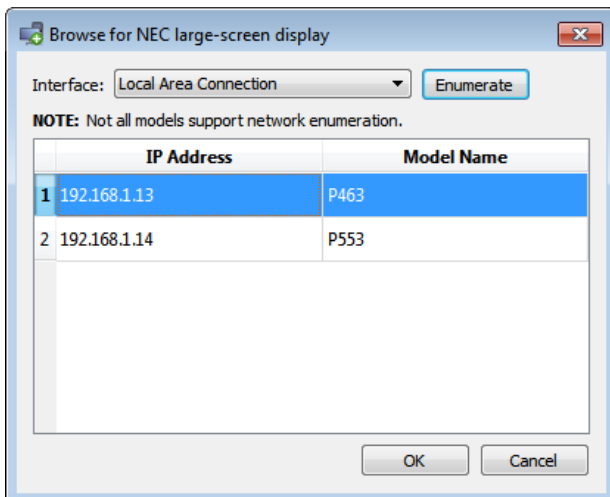
Adding NEC large-screen display(s) connected to LAN



Select **NEC large-screen display connected to LAN**.

Enter the IP address or hostname of the large-screen display or click **Browse...** to view and select a large-screen display currently available on the LAN. If the *LAN to RS232 Bridge* is being used, enter the computer name or IP address of the Windows computer to which the large-screen display is connected.

Browse for NEC Large-Screen Display Dialog




If using the **Browse** function, the **Browse for NEC Large-Screen Display** dialog will attempt to automatically detect any large-screen displays that are available on the LAN. First select the network **Interface** on the computer that is connected to the same network as the large-screen display.

Then click the **Enumerate** button to start the detection process. Any detected displays will be listed by **IP address** and **Model Name**. Select the desired display in the list and click **OK**.

Not all large-screen display models support the automatic network enumeration feature.

If the Monitor ID of the display is not known, then leave the **Monitor ID** selected to **Auto Detect**, otherwise select the **Monitor ID** of the display as configured on the display's OSD.

If the large-screen display connected to LAN also has other displays daisy-chained from it, then select **This is the first display in a daisy chain** and select the lowest Monitor ID in the daisy-chain. Next enter the **Total number of displays in the daisy-chain**.

 **Note:** When using daisy-chains, the Monitor IDs must be numbered uniquely and sequentially.

Click **Test** to confirm the network connection and display detection. If the connection for a single display is successful, then the model name will be automatically entered into the Device Name using the default device naming format. If the connection for multiple displays is successful, **Daisy Chain Host** will be automatically entered as the device name. The **Device Name** is the name used to identify the display in the device tree, and can be edited if desired before it is added to the device tree, or later on by renaming the device in the device tree.

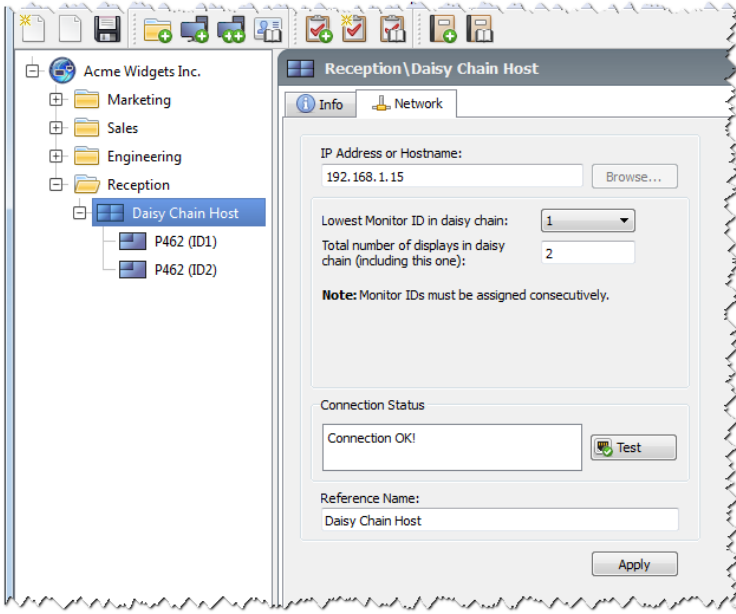
 **Note:** Changing the **Asset Tag** portion of the device name will not change the **Asset Tag** stored in the display. To change the Asset Tag of the display, select **Asset Tag** from the **Display Device Information** list group in the controls shown in the Custom tab of the Device Properties window.



Click **OK** to add the display(s) to the device tree.

Troubleshooting

If an error occurred when performing the **Test** operation, see the troubleshooting steps “Problem: Unable to communicate with an NEC large-screen display” on page 135.

About Daisy Chain Hosts



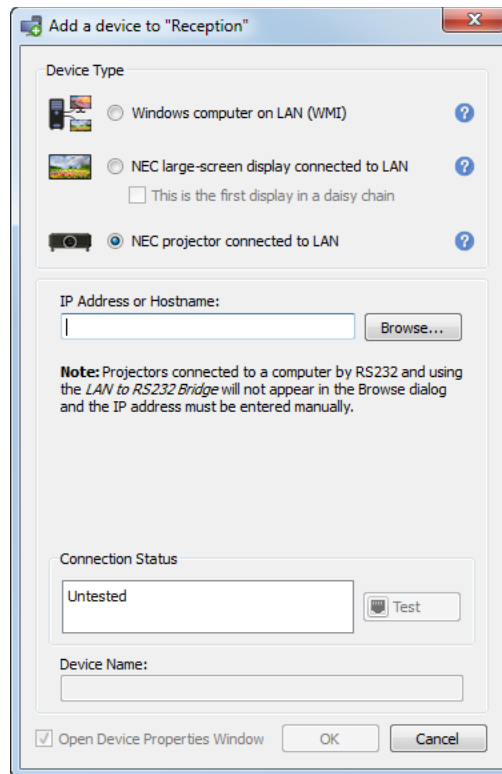
When daisy-chained large-screen displays are added, a virtual device called a **Daisy Chain Host** is created in the *device tree* with the  icon. All of the actual daisy chained displays are branches from this device with the icon .

The **Daisy Chain Host** device is a placeholder for the connectivity information for the entire daisy chain, as follows:

- IP Address or Hostname of the LAN connection on the first display on the daisy chain
- Lowest Monitor ID in the daisy chain
- Total number of displays in the daisy chain

The Monitor IDs for each display will be included in parenthesis in the device names.

Adding a single NEC projector connected to LAN



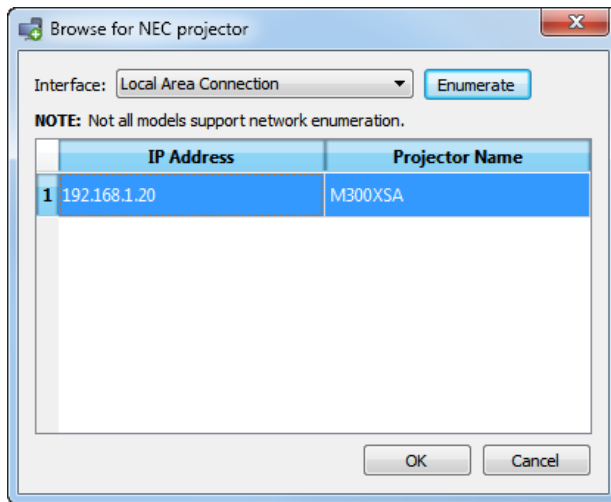
Select **NEC Projector connected to LAN**.

Enter the *IP address* or *hostname* of the projector, or click **Browse** to automatically detect projectors that are connected directly to the LAN.

If the *LAN to RS232 Bridge* is being used, enter the computer name or IP address of the Windows computer.

Note: Projectors connected to a computer by RS232 and using the LAN to RS232 Bridge are not be able to be detected using the Browse function. Not all projector models support the automatic network enumeration feature. In both cases the projector or computer IP address / computer name must be entered manually.

Browse for NEC Projector Dialog



If using the **Browse** function, the **Browse for NEC Projector** dialog will attempt to automatically detect any projectors that are available on the LAN. First select the network **Interface** on the computer that is connected to the same network as the projector.

Then click the **Enumerate** button to start the detection process. Any detected projectors will be listed by **IP address** and **Projector Name**. Select the desired projector in the list and click **OK**.

Not all projector models support the automatic network enumeration feature.

Click **Test** to confirm the network connection. If the connection is successful, then the model name of the projector will be automatically entered into the **Device Name**, together with its **Asset Tag** text (also known as **Projector Name**). The **Device Name** is the name used to identify the projector in the device tree, and can be edited if desired before it is added to the device tree, or later on by renaming the device in the device tree.

Note: Changing the **Asset Tag / Projector Name** portion of the device name will not change the **Asset Tag / Projector Name** stored in the projector. To change the **Asset Tag / Projector Name** of the projector, select **Asset Tag** from the **Display Device Information** list group in the controls shown in the **Custom** tab of the **Device Properties** window.


If the connection is successful, then click **OK** to add the projector to the device tree.


Troubleshooting

If an error occurred when performing the **Test** operation, see the troubleshooting steps “Problem: Unable to communicate with an NEC projector” on page 136.

Adding Multiple Devices

If there are several devices to be added, then adding them using the *Add Multiple Devices* dialog is easier and more efficient than adding one by one using the *Add Single Devices* function.

To add multiple devices to the device tree, use either the **Devices** menu, or right-click an item in the device tree and select **Add Multiple Devices...**, or click the  toolbar button. The *Add Multiple Devices* dialog will appear. Select the type of display and connection to be added from the tabs at the top.

 **Note:** Large-screen displays that are daisy-chained via RS232 *must* be added as a single device, and cannot be added using Multiple Devices. The only exception is when using the RS232 WMI Provider which will automatically add all connected displays when the host computer is added.

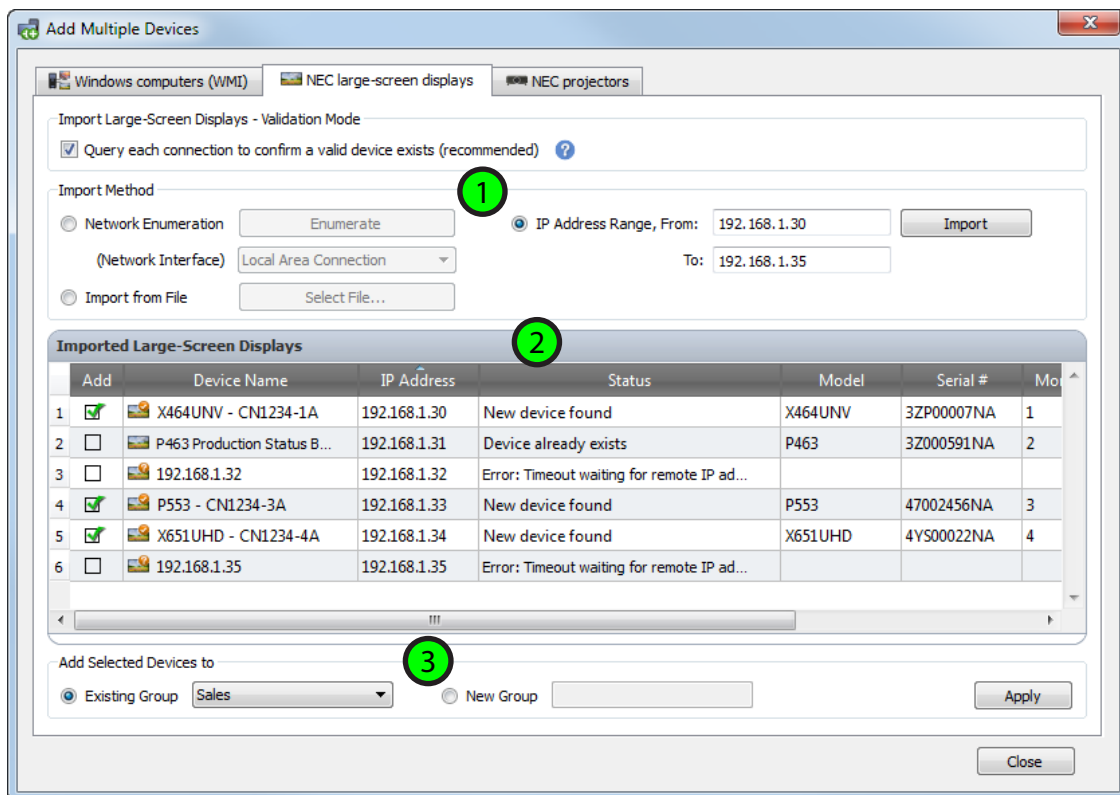
The Add Multiple Devices dialog consists of a tab page for each supported device type:

- Windows computers
- NEC large-screen displays
- NEC projectors

Begin by selecting the tab for the type of device to be added.

The procedure for adding multiple devices can be divided into 3 main steps:

1. Import a list of potential devices
2. Verify the devices to add to the device tree
3. Choose a location in the tree and add the devices



Importing Devices - Device Validation mode

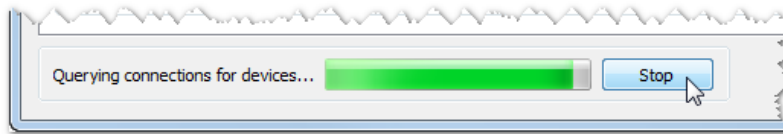
Import Large-Screen Displays - Validation Mode

Query each connection to confirm a valid device exists (recommended) ?

There are numerous advantages to querying the connections for device information:

- New devices will be pre-validated, so they will be configured and ready to use as soon as they are added to the tree.
- The correct default device names will be assigned automatically. Otherwise only the IP addresses or host names can initially be used for the device names.
- The imported devices table will include information about the devices to make them easily identifiable.
- The system will have the information needed to check the device tree for any conflicts with existing devices, report the conflicts and propose how to resolve them.

Querying a large number of devices can be time consuming and the user interface is disabled while the queries are running. However the process can be stopped at any time by clicking the Stop button next to the progress indicator. All items imported up to that point will remain in the table.



Example: The following images show how the same device appears in the table with and without Validation:

Validation Mode checked - The display has been validated and assigned the proper default device name. The model name, serial number, monitor ID and asset tag are now known. The display is a confirmed NEC product and will be ready for use as soon as it is added to the tree.

Imported Large-Screen Displays								
Add	Device Name	IP Address	Status	Model	Serial #	Mon. ID	Asset tag	
1	X651UHD - CN1234-4A	192.168.1.34	New device found	X651UHD	4YS00022NA	4	CN1234-4A	

LAN Status: A valid device was found on the LAN.
 Database Status: The device found does not exist in the database.
 Checked Action: The device will be added to the database.
 Device Found: X651UHD - CN1234-4A
 Database Device: None

Validation mode unchecked - Nothing is known about the network device at this IP address, if there is one. The IP address is used as the device name. This IP address will be added to the tree as an unconfirmed NEC large-screen display.

Imported Large-Screen Displays								
Add	Device Name	IP Address	Status	Model	Serial #	Mon. ID	Asset tag	
1	192.168.1.34	192.168.1.34	Unknown					

LAN Status: Unknown - The connection was not queried for a valid device.
 Database Status: This connection is not being used in the database.
 Checked Action: An unconfirmed device will be added to the database.
 Device Found: Unknown
 Database Device: None

Step 1: Importing Devices

Importing devices involves populating the **Imported Devices** table with a list of potential devices to be added.

Validation Mode - When the **Query each connection to confirm a valid device exists** box is checked, a test connection will be performed on each device as it is being imported.

Import Method - There are several methods provided for establishing the list of devices to import. These methods vary depending on the types of devices, and are explained in detail in the following sections:

- Windows computers - See “Importing multiple Windows computers (WMI)” on page 35.
- NEC large-screen displays - See “Importing multiple NEC large-screen displays” on page 40.
- NEC projectors - See “Importing multiple NEC large-screen displays” on page 40.

Step 2: Verifying the Devices

Once the list of potential devices has been imported, the **Imported Devices** table is used to select the devices to be added to the device tree.

Imported Large-Screen Displays								
	Add	Device Name	IP Address	Status	Model	Serial #	Mon. ID	Asset tag
1	<input checked="" type="checkbox"/>	X464UNV - CN1234-1A	192.168.1.30	New device found	X464UNV	3ZP00007NA	1	CN1234-1A
2	<input type="checkbox"/>	P463 Production Status Board	192.168.1.31	Device already exists	P463	3Z000591NA	2	CN1234-2A
3	<input type="checkbox"/>	192.168.1.32	192.168.1.32	Error: Timeout waiting for remote IP address				
4	<input checked="" type="checkbox"/>	P553 - CN1234-3A	192.168.1.33	New device found	P553	47002456NA	3	CN1234-3A
5	<input checked="" type="checkbox"/>	X651UHD - CN1234-4A	192.168.1.34	New device found	X651UHD	4YS00022NA	4	CN1234-4A
6	<input type="checkbox"/>	192.168.1.35	192.168.1.35	Error: Timeout waitir				

LAN Status: A valid device was found on the LAN.
 Database Status: The device found does not exist in the database.
 Checked Action: The device will be added to the database.
 Device Found: P553 - CN1234-3A
 Database Device: None

The **Imported Devices** table has the following columns:

Add - Contains the checkbox used to either include or exclude the device. Typical connections that were detected without conflicts will be checked by default, whereas any uncommon connection conditions will not be checked.

Note: A context menu providing operations to check or uncheck multiple devices at a time can be opened by right-clicking on the device list.

Device Name - For new devices, this is the device icon and name that will appear in the tree if the device is added. For existing devices this is the name of the device used in the tree. The device name can be edited in place by either double-clicking on it, or right-clicking and selecting **Edit Device Name** from the context menu.

IP Address or Host Name - If the devices were imported by IP address, then this column will be named **IP Address** and will contain the IP addresses. Similarly, if the devices were imported by host name, then this column will be named **Hostname** and will contain the host names.

Status - Shows the import status of the device. A detailed tooltip for each device will contain up to 5 pieces of additional information about the status of the device and its connection:

- **LAN Status** - The result of the test connection (available only when Validation Mode is selected)
- **Database Status** - Reports if this connection is being used by another device in the tree, or if the device found on the LAN already exists in the tree (available only when Validation Mode is selected)
- **Checked Action** - Describes how the device will be added to the tree, or any connection changes that will take place
- **Device Found** - The default device name of the device found on the LAN at this connection (available only when

Validation Mode is selected)

- **Database Device** - The device name of a device in the tree that is already using this connection.
- **Model (large-screen displays and projectors only)** - The model name read from the device.
- **Serial # (large-screen displays and projectors only)** - The serial number read from the device.
- **Mon. ID (large-screen displays only)** - The monitor ID of the display.
- **Asset Tag (large-screen displays and projectors only)** - the asset tag string read from the device.

Step 3: Adding the Devices to the Device Tree

Before adding the selected devices to the tree, the destination group can be verified and changed if necessary.

Select **Existing Group** and choose a group from the drop-down list to add the devices to an existing group.

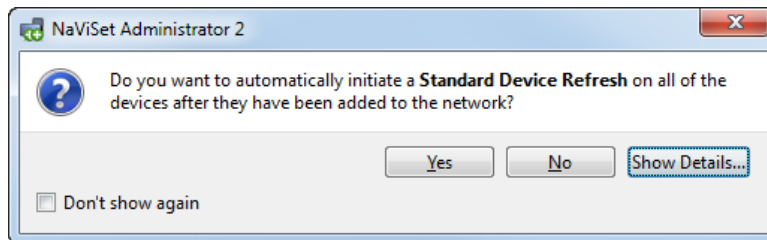
To create a new group, select **New Group** and enter a name for the group. The new group will be added to the bottom of the tree as a child of the top group (My Network).

Note: The insertion position will be indicated with a  icon in the device tree.

Once the destination group is established, click **Apply** to add the devices to the tree.

Refreshing Device Information

Immediately after clicking the **Apply** button, the following message box will be displayed:



Select **Yes** to automatically start a **Standard Device Refresh** on all of the devices once they have been added. Performing a refresh at this point ensures that the resulting devices will be fully configured for all NaViSet Administrator operations.

Before choosing **not** to perform a refresh at this point, consider:

- Desktop displays attached to Windows computers will not appear in the device tree until a standard refresh is performed.
- A Standard Device Refresh will eventually be required to have full control over the device.
- Attempting to manage the device in NaViSet Administrator will likely result in various warning messages until a standard refresh is performed.

Although performing a refresh on a large number of devices can be time-consuming, refreshes that are in progress can be canceled and re-run at a later time as needed.

The devices are removed from the Imported Devices table as they are being added to the device tree. Once complete, only the unselected devices will remain. This procedure can be repeated to import and add additional devices without closing the dialog.

Importing multiple Windows computers (WMI)

Windows computers can be imported in several different ways:

1. Active Directory
2. Network Enumeration
3. Import from File
4. IP address range

The screenshot shows a dialog box titled "Import Method". It contains three radio button options: "Active Directory" (which is selected), "Network Enumeration", and "Import from File". Each option has a corresponding button: "Query..." for Active Directory, "Enumerate..." for Network Enumeration, and "Select File..." for Import from File. To the right of these options is an "IP Address Range" section with "From:" and "To:" input fields and an "Import" button.

Whenever computers are imported using any of the above methods, a *Credentials* dialog will be displayed. Access credentials to the computer must be specified using one of the following options:

- The currently logged in user's credentials
- An existing credential from the *Credential Library* (see page 74 for more information)
- A device-specific credential to be entered, and optionally added to the *Credential Library*

The screenshot shows a dialog box titled "Credentials". It contains three radio button options: "Connect as Current User", "Use Library Credential" (which is selected), and "Device-specific Credential". The "Use Library Credential" option has a dropdown menu showing "Admin". The "Device-specific Credential" option has an input field and an "Edit..." button. At the bottom are "Continue" and "Cancel" buttons.

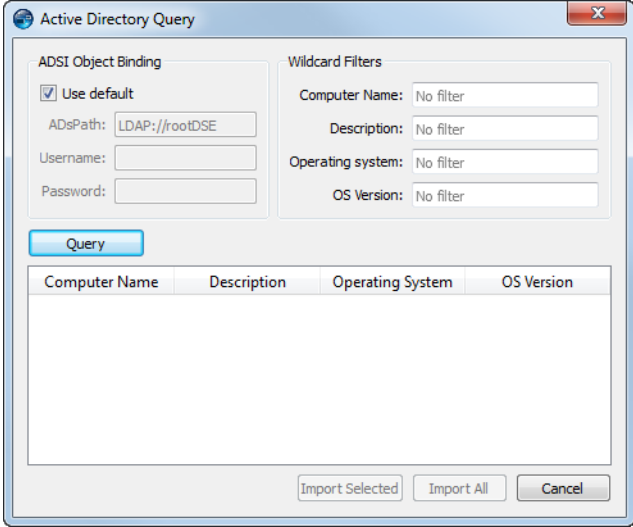
Note: The same access Credentials are applied to all of the computers imported together. To use different credentials on different computers, add them separately by repeating this procedure.

Add computers using Active Directory

If the Windows network is part of a domain with an *Active Directory* server, then the server can be queried to retrieve a list of computer names in the domain. This is a fast and reliable way to add computers. The names of computers that are currently not available on the network can be retrieved via Active Directory.

Select **Active Directory** and click the **Query...** button to open the *Active Directory Query* dialog.

Active Directory Query Dialog



ADSI Object Binding - Defines the address and credentials used to connect to the Active Directory Server. Select *Use Default* unless connecting to a different domain or credentials than the default.

Query - Sends a query to the Active Directory Server and lists the results.

Wildcard Filters - Allows the query results to be filtered by applying text wildcards to the Computer Name, Description, Operating System and OS Version columns.

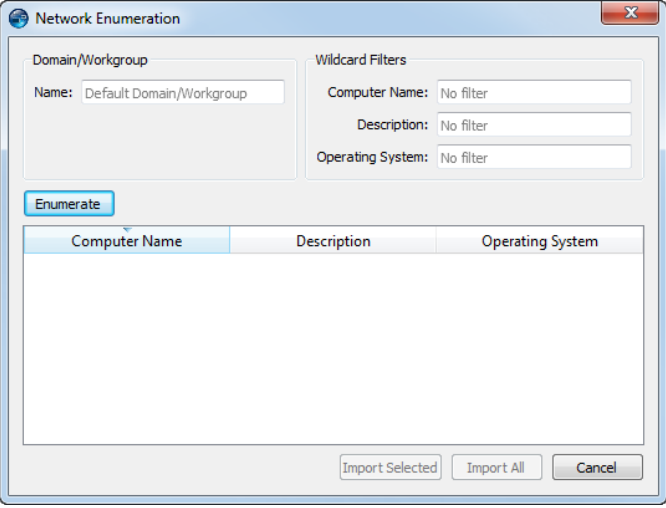
Import Selected and **Import All** - Adds the items to the table, after the access credentials have been specified.

Add computers using Network Enumeration

Windows computers that are currently online on the LAN can be enumerated and added in the same way network devices are found and shown in the Windows Network list. A computer must typically be running and have been connected to the LAN for several minutes in order to appear in the *Network Enumeration* list. The network enumeration can take up to several minutes to perform depending on the number of devices on the network.

Select **Network Enumeration** and click the **Enumerate...** button to open the *Network Enumeration* dialog.

Network Enumeration Dialog



Name: - Defines the domain or workgroup to enumerate. The current domain/workgroup will be used if none is entered.

Enumerate - Starts the network enumeration process and lists the results.

Wildcard Filters - Allows the query results to be filtered by applying text wildcards to the Computer Name, Description, and Operating System.

Import Selected and **Import All** - Adds the items to the table, after the access credentials have been specified.

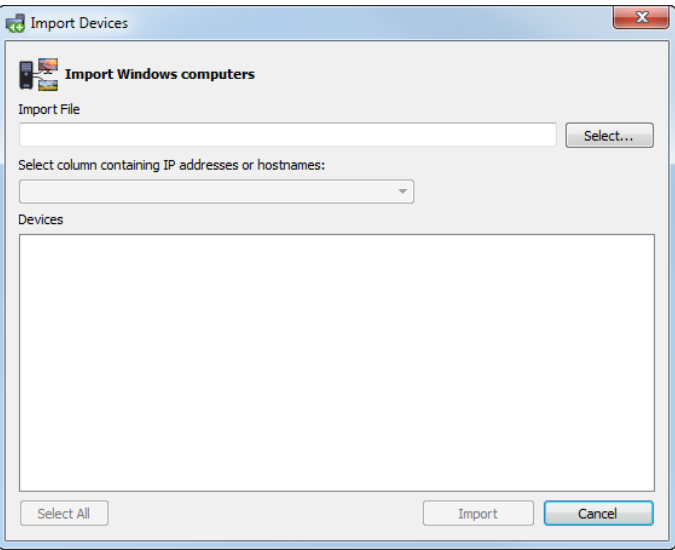
Add computers using Import from File

A list of IP addresses and/or computer names can be imported from any of the following file types:

- A column of an Excel spreadsheet file
- A delimited text file
- Another NaViSet Administrator 2 database file

Select **Import from File** and click the **Select File...** button to open the *Import Devices* dialog.

Import Devices Dialog - Windows computers



Import File: - Shows the file name selected to import the list from.

Select... - Selects the file to import from.

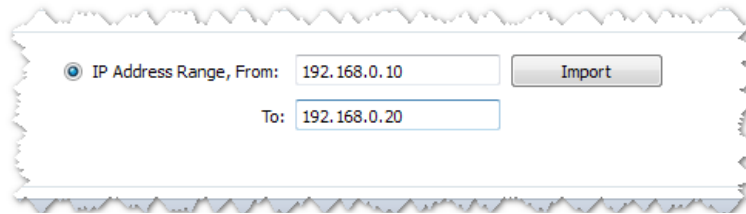
Select column containing IP addresses or hostnames - Lists the column names from the first row of data. Select the column to use as the IP address or hostname (computer name).

Devices - Shows all items, or rows in the currently selected column.

Import - Closes this dialog and opens the Credentials dialog. Once the access credentials have been entered, the selected computers are added to the Imported Computers table.

Add computers using IP Address Range

A range of computer IP addresses can be specified and added. Enter the lower IP range in **From**, and the upper range in **To**.



The screenshot shows a dialog box with a radio button selected next to the text "IP Address Range, From:". To the right of this text is a text input field containing "192.168.0.10". To the right of this field is a button labeled "Import". Below the "From:" field is the text "To:" followed by another text input field containing "192.168.0.20".


Click **Import** to open the **Credentials** dialog. Once the access credentials have been entered, all of the IP addresses in the specified range will be added to the **Imported Computers** table.

Importing multiple NEC large-screen displays

Multiple NEC large-screen displays can be imported in three different ways:

1. Automatic Network Enumeration of NEC large-screen displays on the network
2. Import from File
3. IP address range

 **Note:** The Monitor ID of each display is detected automatically if the display is reachable.

 **Note:** This is NOT the proper procedure for adding multiple displays that are daisy-chained using rs232. For these configurations, the entire daisy chain must be added as a single **Daisy Chain Host** device via the **Add Single Device** dialog.

Import Method

<input checked="" type="radio"/> Network Enumeration	<input type="button" value="Enumerate"/>	<input type="radio"/> IP Address Range, From: <input style="width: 100px;" type="text"/>	<input type="button" value="Import"/>
(Network Interface)	<input style="width: 100%;" type="text" value="Local Area Connection"/>	To: <input style="width: 100px;" type="text"/>	
<input type="radio"/> Import from File	<input type="button" value="Select File..."/>		

Add NEC large-screen displays using Network Enumeration

Newer models of NEC large-screen displays that are connected directly to LAN are capable of being automatically identified. A special identification message will be broadcast and list any displays that responded. First select the network **Interface** to be used to send the broadcast message on, then click the **Enumerate** button. Any NEC large-screen displays that were identified will be added to the **Imported Large-Screen** Displays table.

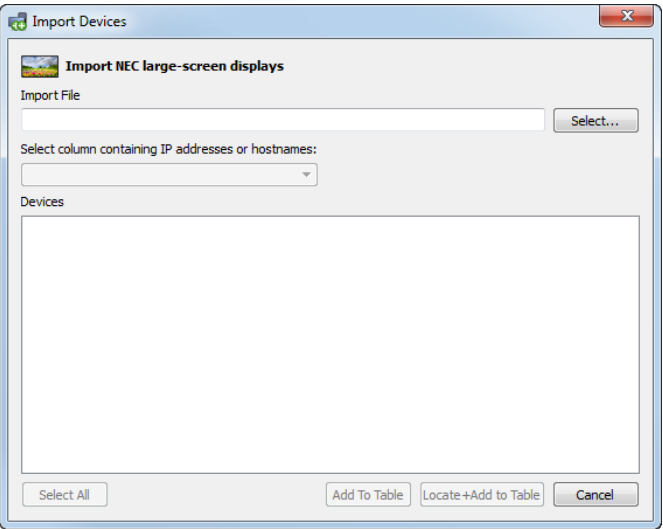
Add NEC large-screen displays using Import from File

A list of IP addresses can be imported from any of the following file types:

- A column of an Excel spreadsheet file
- A delimited text file
- Another NaViSet Administrator 2 database file

Select **Import from File** and click the **Select File...** button to open the *Import Devices* dialog.

Import Devices Dialog - NEC large-screen displays



Import File: - Shows the file name selected to import the list from.

Select... - Selects the file to import from.

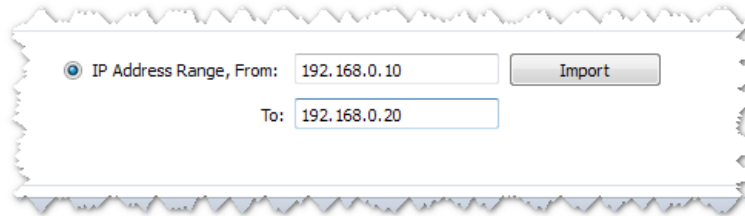
Select column containing IP addresses or hostnames - Lists the column names from the first row of data. Select the column to use as the IP address.

Devices - Shows all items, or rows in the currently selected column.

Import - Closes this dialog and adds the selected displays to the Imported Large-Screen Displays table.

Add NEC large-screen displays using IP Address Range

A range of display IP addresses can be specified and added. Enter the lower IP range in **From**, and the upper range in **To**.



The screenshot shows a web form with a radio button selected next to the text "IP Address Range, From:". To the right of this text is a text input field containing "192.168.0.10". To the right of this field is a grey button labeled "Import". Below the "From:" field is the text "To:" followed by another text input field containing "192.168.0.20". The entire form is enclosed in a white box with a decorative, torn-edge border.

Click **Import** to add all of the IP addresses in the specified range to the **Imported Large-Screen Displays** table.

Importing multiple NEC projectors

Multiple NEC projectors can be imported in the following different ways:

1. Automatic Network Enumeration of projectors on the network
2. Importing a list of IP addresses from a file
3. Specifying an IP address range

Import Method


Network Enumeration IP Address Range, From:

(Network Interface) Local Area Connection To:

Import from File

Add NEC projectors using Network Enumeration

Many models of NEC projectors that are connected directly to LAN are capable of being automatically identified. A special identification message will be broadcast and list any projectors that responded. First select the network **Interface** to be used to send the broadcast message on, then click the **Enumerate** button. Any projectors that were identified will be added to the list below.

 **Note:** Projectors connected to a computer by RS232 and using the LAN to RS232 Bridge are not be able to be detected using the Network Enumeration function. Not all projector models support the automatic network enumeration feature.

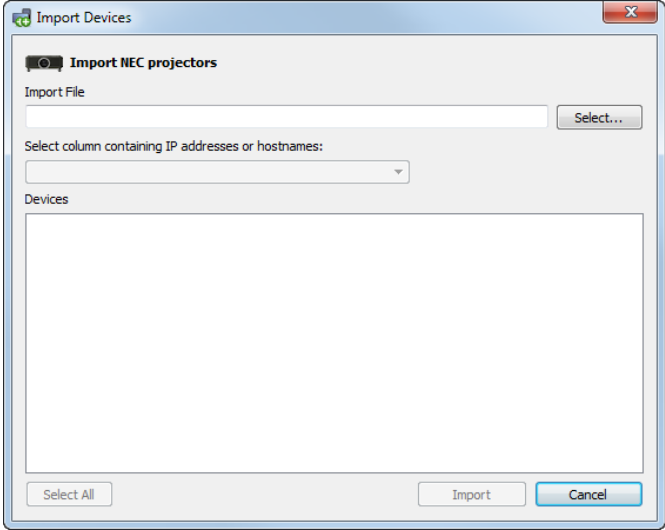
Add NEC projectors using Import from File

A list of IP addresses can be imported from any of the following file types:

- A column of an Excel spreadsheet file
- A delimited text file
- Another NaViSet Administrator 2 database file

Select **Import from File** and click the **Select File...** button to open the *Import Devices* dialog.

Import Devices Dialog - NEC projectors



Import File: - Shows the file name selected to import the list from.

Select... - Selects the file to import from.

Select column containing IP addresses or hostnames - Lists the column names from the first row of data. Select the column to use as the IP address.

Devices - Shows all items, or rows in the currently selected column.

Import - Closes this dialog and adds the selected projectors to the **Imported Projectors** table.

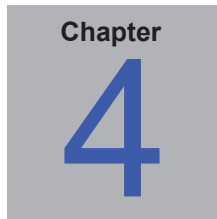
Add NEC projectors using IP Address Range

A range of display IP addresses can be specified and added. Enter the lower IP range in **From**, and the upper range in **To**.

IP Address Range, From:

To:

Click **Import** to add all of the IP addresses in the specified range to the **Imported Projectors** table.



Configuring Devices

This chapter covers how to configure all of the different supported devices so that NaViSet Administrator can successfully connect to, query, and control them.

Desktop Displays

For desktop displays, see:

“Desktop display(s) connected to a Windows Computer” on page 46.

NEC large-screen displays

Identify the type of connection available on the model of NEC large-screen display being used, by referring to “Configuring and connecting NEC large-screen displays” on page 49. This section explains the various different types of connections and daisy-chain options available.

For specific information on each type of connection available on NEC large-screen displays, see:

“NEC large-screen display(s) using direct LAN connection” on page 53

“NEC large-screen display(s) with LAN hub using direct LAN connection” on page 54

“NEC large-screen display(s) using LAN to RS232 Bridge” on page 55

“NEC large-screen display(s) with LAN hub using LAN to RS232 Bridge” on page 57

“NEC large-screen display(s) using RS232 WMI Provider” on page 59

“NEC large-screen display(s) with SBC and dual LAN connections” on page 61

“NEC large-screen display with SBC and single LAN connection” on page 63

NEC Projectors

For NEC projectors, see:

“NEC projector with direct LAN or wireless connection” on page 65

“NEC projector connected via Windows Computer to LAN” on page 66

Desktop display(s) connected to a Windows Computer

Configuration Overview

One or more desktop displays connected to a Windows computer with a standard video cable. The **DDC/CI WMI Provider** can be optionally installed on the computer to provide advanced information for all displays and is required for two way control of NEC displays.

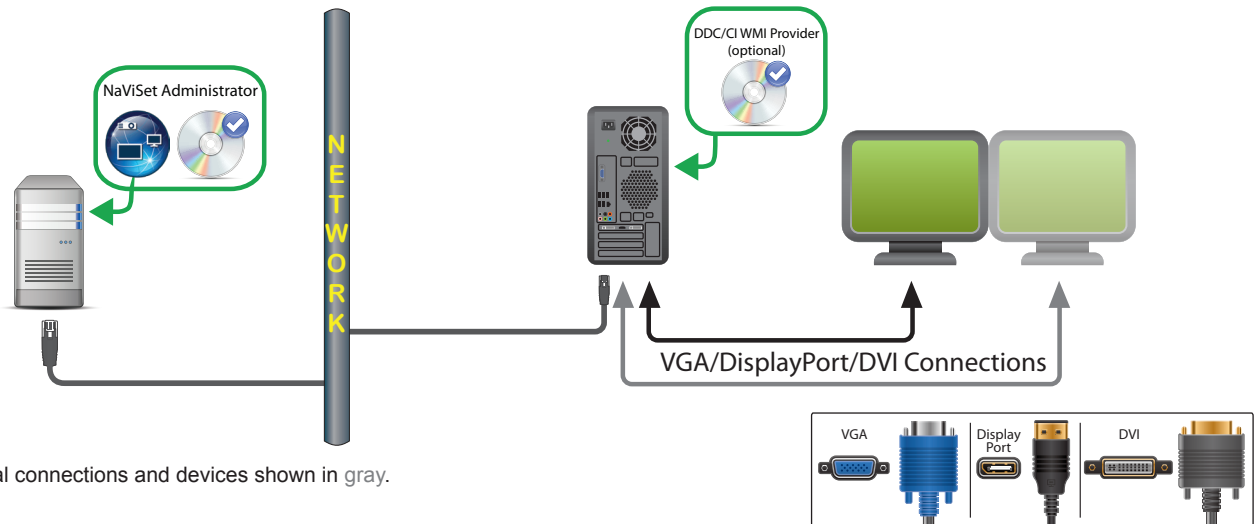
Configuration Features

1. Basic information about the main display such as Model Name and Serial Number without requiring the DDC/CI WMI Provider to be installed.
2. Communications with the display(s) via the video graphics card and standard video cables, so no additional cabling is required.
3. Supports WMI Scripting when using **DDC/CI WMI Provider**. See Appendix G on page 149.

Adding device(s) to NaViSet Administrator

Select device type **Windows computer on LAN (WMI)** when adding devices.

Connection Diagram



Note: Optional connections and devices shown in gray.

Restrictions

1. KVM (Keyboard / Video / Mouse) switches, splitters, and long video cables (>3m) are not supported.
2. Support in the video graphics card driver is required for two way communications. Always update to the latest video drivers available from the video graphics card vendor. Video drivers included by default in Windows might not provide communications support.
3. DDC/CI WMI provider required for detailed information and information from additional displays other than the primary display.
4. See “Windows Computer on LAN connections via WMI” on page 48 for important information about configuring WMI.

Notes

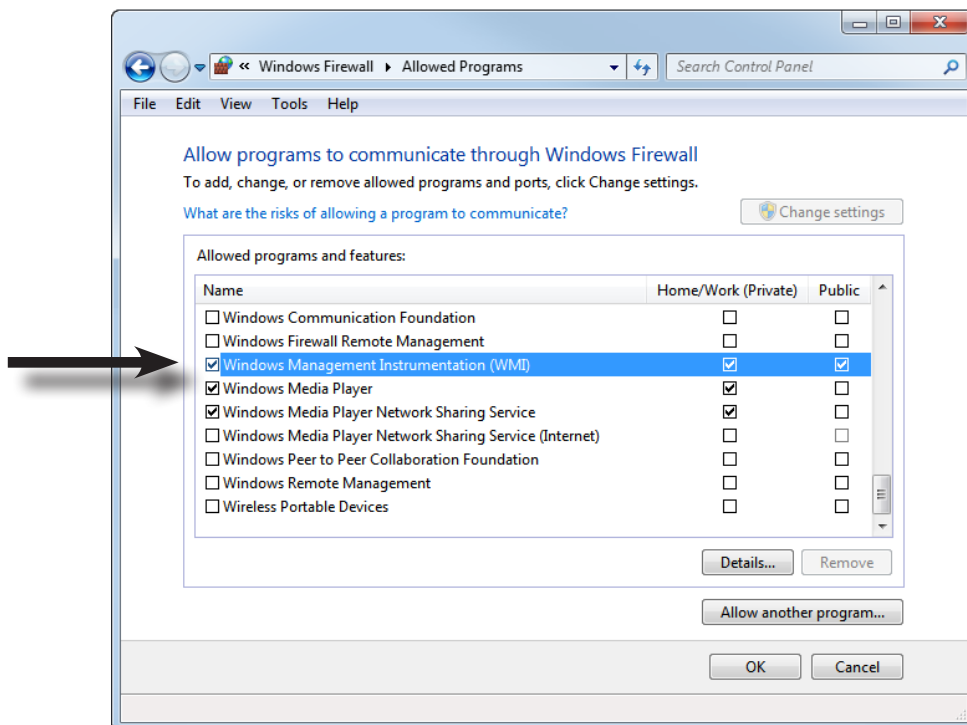
1. Basic display information available for both NEC and third party desktop displays is available.
2. Most newer graphics cards supported. See ***DDC/CI WMI Provider README*** for latest support information.
3. The *DDC/CI WMI Provider* can communicate via USB to NEC PA series of desktop displays.
4. Support for Windows computer Shutdown, Restart, Wake-on-LAN, and monitoring of computer parameters is provided automatically.
5. Control of NEC large-screen displays is supported by DDC/CI but with some limitations. See Appendix A on page 137 for details.
6. The *DDC/CI WMI Provider* cannot be installed at the same time as the *RS232 WMI Provider*.

Windows Computer on LAN connections via WMI

When connecting to remote Windows computers via WMI, the following important points must be verified to ensure a successful connection:

1. The Windows user account used to access the remote computer must have sufficient access privileges to WMI (specifically the ROOT\CIMV2 namespace). Typically Administrator accounts have sufficient access privileges by default.
2. The password for the account used to access the remote computer must not be a blank password.
3. The Windows Firewall on both the local and remote computers must allow remote access to WMI. The default Windows Firewall settings typically block access to WMI, thus preventing remote access to a computer.

The Windows Firewall settings for WMI can also be manually changed from the Windows Control Panel as shown below, in order to allow remote access:



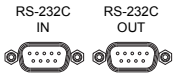
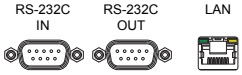

4. If the Windows computers on the network are part of a Windows *Workgroup* and not a *Domain*, the default UAC (User Account Control) security settings will not allow access to WMI, even if the Firewall is disabled. Installing the *DDC/CI* or *RS232 WMI Providers* on the computer will automatically configure the security settings to allow access.

Configuring and connecting NEC large-screen displays

NEC large-screen displays can be connected to the network in a variety of ways using RS232 or LAN, depending on the model.

Also, depending on the model, displays can be daisy-chained together using RS232 or LAN cables. Daisy-chaining displays can simplify cable wiring, and allows more than one display to be controlled from one access connection, as well as minimizing the lengths and number of cable runs.

The following table shows the types of daisy-chains available depending on the connection configuration of the display model being used.

Display connection configuration	Connection description	Daisy-chain type	Input connection from network to first display in daisy-chain
	RS-232C IN and OUT	RS232	RS232
	RS-232C IN, OUT, and LAN	RS232	LAN or RS232 (selectable)
	RS-232C IN, LAN 1 and LAN2	LAN	LAN or RS232

To determine the correct display connection configuration for the display models being used:

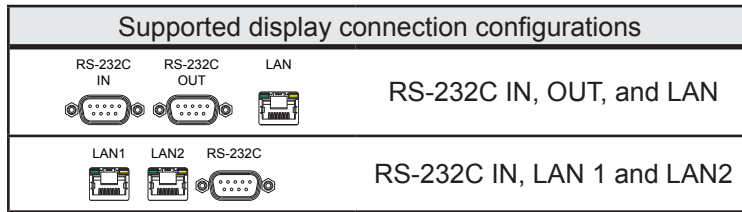
- Look at the physical connections on the display.
- Refer to the display's User's Manual.

About Monitor IDs

- **Each display has a Monitor ID number that is used to individually identify and address it when used in a daisy-chain.**
- **Each display in a daisy-chain must have a unique Monitor ID (except for LAN daisy-chain connections where the Auto ID function is not used).**
- **The Monitor ID is configured via the display's OSD. Models that support LAN daisy-chains can have the Monitor ID set automatically using the Auto ID function. See "Using the Auto ID function with a LAN daisy-chain" on page 52 and the display User's Manual for more information.**
- **The Monitor ID configured in NaViSet Administrator must match the Monitor ID on each display.**
- **Monitor IDs also allow displays to be individually controlled from a single IR remote control. See the display User's Manual for more information on using the IR Remote with multiple displays.**

The following sections describe each of the 3 basic connection types for connecting multiple NEC large-screen displays.

Connecting Directly to LAN



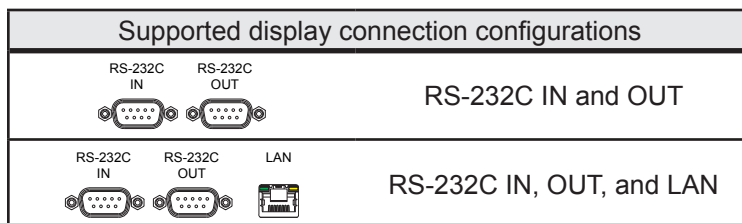
Models that have an RJ45 LAN connection can be individually connected directly to a LAN via a hub or switch instead of daisy-chaining displays together. This may require more wiring since each display is individually connected directly to a central LAN hub or switch. The advantages of using this method is that communications to other displays will still function even if:

- A display is removed from the video wall without bridging the daisy-chain.
- A display loses AC power or is turned off via the display's main power switch.
- A display fails.
- There is a fault in cabling to an individual display.
- A display enters standby power mode and the LAN POWER setting is set to OFF (models that support LAN daisy-chain only).

Important points to note:

- Each display must have a unique IP address.
- Since each display is addressed by the combination of IP address and Monitor ID, each display can have the same or unique Monitor IDs.

Connecting via an RS232 Daisy-chain



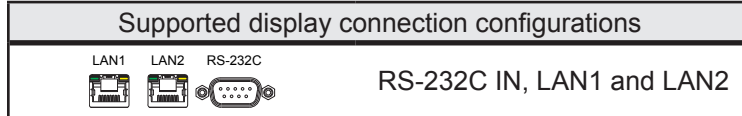
Models that have two RS232 connections (not including any RS232 connections on OPS devices), support RS232 daisy-chaining. The connection labeled IN is the input to the display from a host computer or previous display in the daisy-chain. The other connection labeled OUT is the output to connect to the IN on the next display in the daisy chain.

Important points to note:

- When using RS232 to connect displays using a daisy-chain, each display on the chain must have a unique Monitor ID (set via the display's OSD).
- Displays must be connected using an RS232 serial NULL modem cable (also known as a "crossover" cable).
- The first display in the daisy-chain can be connected to a host computer either via RS232, or by LAN if the model has an RJ45 LAN connection (not including any RJ45 LAN connections on OPS devices). When connected via LAN, the first display can forward commands received over LAN to other displays in the RS232 daisy-chain.
- The RS232 connection from a host computer must connect to the RS232 IN on the first display.

- Communications via both LAN and RS232 are not supported at the same time. The type of communications link to use to the display must be selected by OSD setting EXTERNAL CONTROL RS-232C / LAN.

Connecting via a LAN Daisy-chain



Models that have two RJ45 LAN connections (not including any RJ45 LAN connections on OPS devices) support LAN daisy-chaining. The RJ45 LAN connection labeled LAN1 should be used as an input to the display from the network. The other LAN connection labeled LAN2 is the output to connect to the LAN1 on the next display in the daisy chain.

The display functions as a two port LAN hub for LAN traffic.

Important: *The LAN hub function only works when AC power is applied to the display and the LAN interface is powered on. By default the LAN POWER setting is set to turn off when the display enters a standby power mode. This will prevent communications with other devices along the LAN daisy-chain. To prevent this, change the LAN POWER setting ON via the OSD. This setting can also be automatically set to ON when the device is added to NaViSet Administrator if the preference setting is selected - see "Devices" on page 114.*

Displays in a LAN daisy-chain that are connected to a LAN network can be addressed in two different ways:

1. Direct (recommended):

Each display in a LAN daisy-chain can also be added to NaViSet Administrator as an individual NEC large-screen display, rather than as part of a daisy-chain, by adding each display by its IP address and Monitor ID.

NaViSet Administrator will communicate directly to each display via its IP address.

2. Via Translation:

The first display in a LAN daisy-chain can act as a host for commands it receives for any of the other displays further along the daisy-chain. It will translate and forward to the relevant display any commands received via the LAN2 connection sent to its IP address, but with Monitor IDs for other displays in the daisy-chain.

In order to do this, the Auto ID function must be successfully performed on the first display. The Auto ID function is used to identify all displays along the LAN daisy-chain and assign them sequential Monitor IDs. The first display in the LAN daisy-chain stores a table of the IP addresses and assigned Monitor IDs for all of the other displays in the daisy-chain.

To use this type of addressing, the displays must be added using the **Add Single Device** dialog and selecting **This is the first display in a daisy chain**. See "Adding NEC large-screen display(s) connected to LAN" on page 27 for more information.

IMPORTANT: Using direct addressing for each NEC large-screen display is highly recommend when using NaViSet Administrator since it allows simultaneous communications with multiple displays, rather than having to wait for the first display to process communications for each display in turn within the daisy-chain.

Therefore when adding NEC large-screen displays that are daisy-chained via LAN, it is recommended to add them individually by IP address, rather than treating them as a daisy-chain and using the "This is the first display in a daisy-chain".

See the following for more information on using the Auto ID function.

Using the Auto ID function with a LAN daisy-chain

- The LAN2 RJ45 (output) of a display must connect to the LAN1 RJ45 (input) on the next display in a daisy-chain.
- Each display must have a unique IP address assigned.
- Network hub devices must not be used to create multiple branches of displays along the LAN daisy-chain. All displays must be connected sequentially.
- The LAN2 RJ45 of the last display in the daisy-chain must not be connected back to the network (do not form a network loop).
- Monitor IDs are automatically assigned sequentially starting at Monitor ID 1.
- Monitor IDs are assigned based on the physical LAN cable connection order - not the IP address assignment order.
- All displays must be powered on when performing the Auto ID function.
- The Auto ID function should only be performed from the first display in the daisy-chain. Do not perform Auto ID from displays further along the daisy-chain.

NEC large-screen display(s) using direct LAN connection

Supported Display Connection Configurations



Configuration Overview

Large-screen display connected to directly LAN and using one IP address.

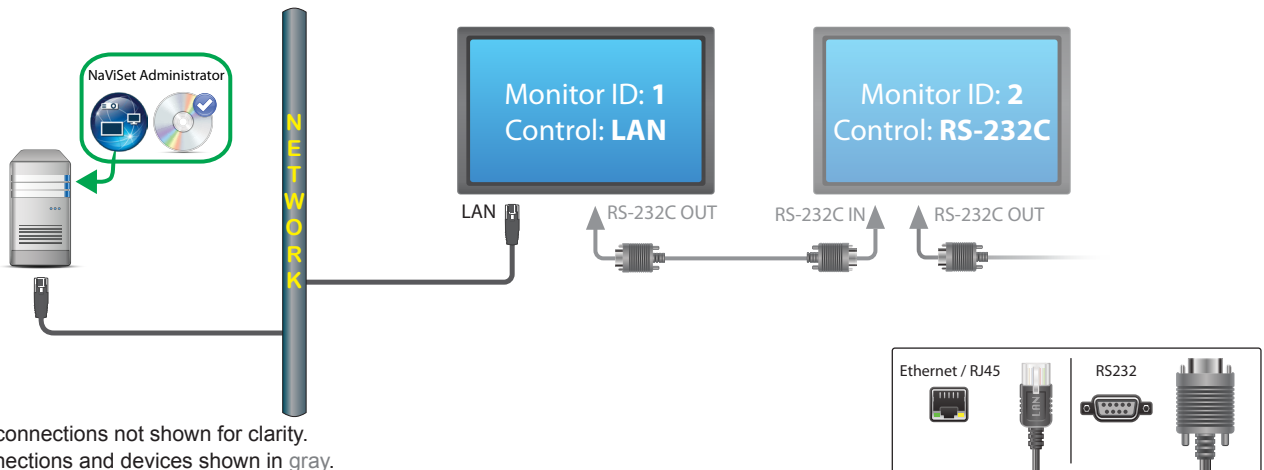
Configuration Features

1. Additional displays can be daisy chained from the LAN-connected display via RS232.
2. Operates without a computer.

Adding device(s) to NaViSet Administrator

Select device type **NEC large-screen display connected to LAN** when adding devices. See **Restrictions** below.

Connection Diagram



Note: Video connections not shown for clarity.
Optional connections and devices shown in gray.

Restrictions

1. Each display on the daisy-chain must have a unique Monitor ID.
2. Monitor IDs for Daisy-chained displays do not have to start at 1, but must be consecutive.
3. The first display must be configured to use LAN. Others must be configured to use RS-232C control.
4. RS-232C cables must be crossover / NULL modem type.
5. If displays are daisy-chained, they must be added to the device tree using **Add Single Device...** and selecting **This is the first display in a daisy chain**.

Notes

1. RS232 splitters or Y connections are not permitted on any connection.

NEC large-screen display(s) with LAN hub using direct LAN connection

Supported Display Connection Configurations



Configuration Overview

Large-screen display with internal LAN hub connected to directly LAN.

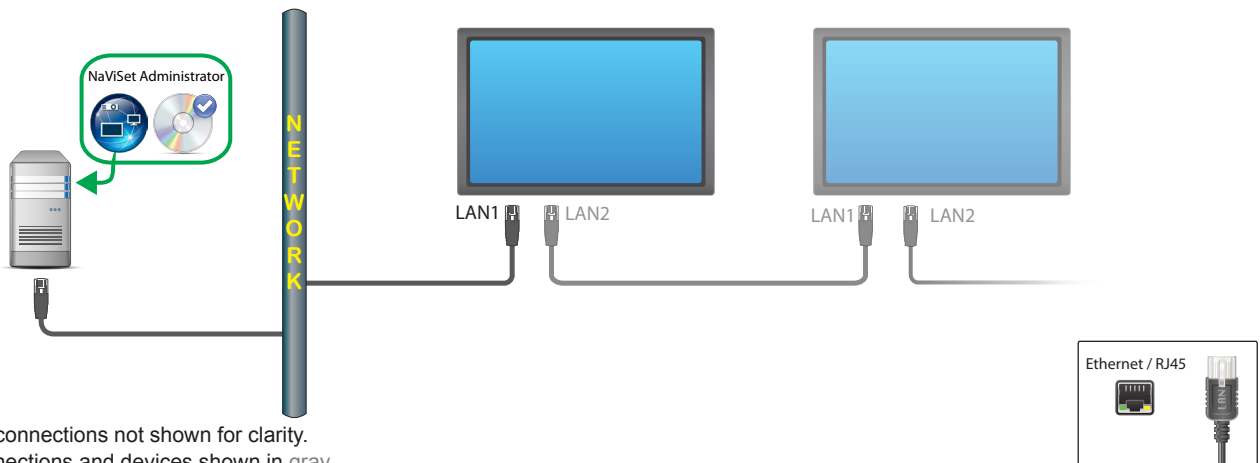
Configuration Features

1. Additional displays can be daisy-chained from the first display via LAN using the internal LAN hub.
2. Operates without a computer.

Adding device(s) to NaViSet Administrator

Select device type **NEC large-screen display connected to LAN** when adding devices.

Connection Diagram



Note: Video connections not shown for clarity.
Optional connections and devices shown in gray.

Restrictions

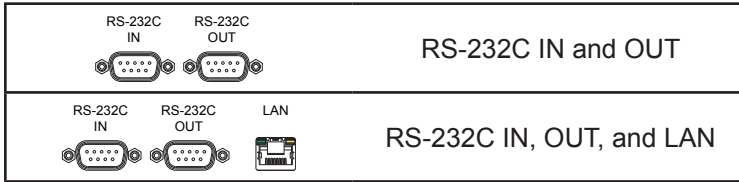
1. Each display must have a unique IP address.
2. Monitor IDs can be the same or unique for each display.
3. If the Auto ID function is used, Monitor IDs will be assigned automatically starting at ID 1 on the first display. See “Using the Auto ID function with a LAN daisy-chain” on page 52 for more information.

Notes

1. For maximum operation speed, it is highly recommended to treat each display as an individually connected LAN displays in NaViSet Administrator, rather than as a daisy-chain. See page 51 for more information.

NEC large-screen display(s) using LAN to RS232 Bridge

Supported Display Connection Configurations



Configuration Overview

Windows computer with one COM port using **LAN to RS232 Bridge** utility, and connected to a large-screen display via RS232.

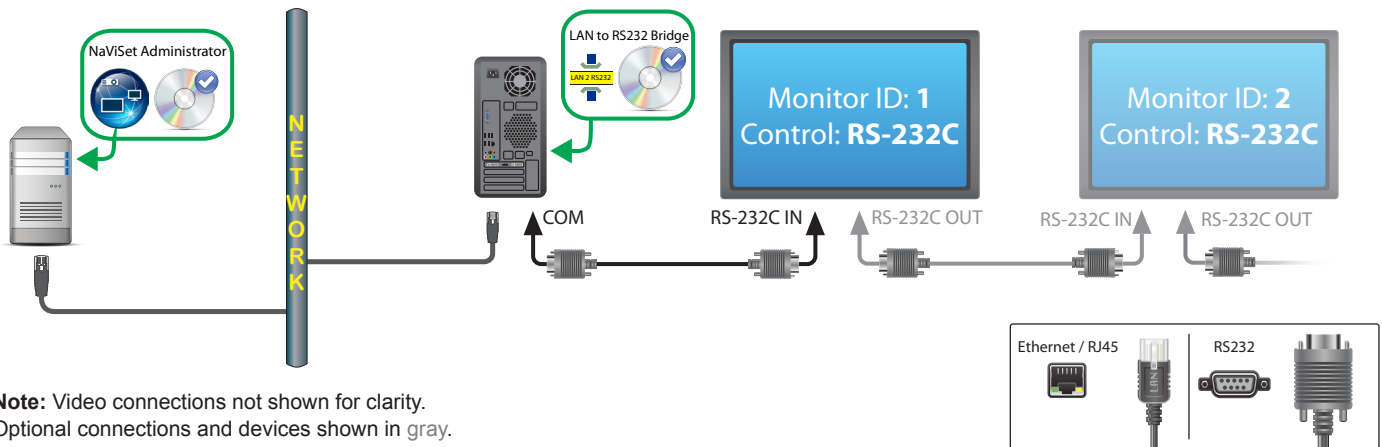
Configuration Features

1. Uses one COM port on the host computer.
2. Additional displays can be daisy chained via RS232.
3. Fast command operation.

Adding device(s) to NaViSet Administrator

Select device type **NEC large-screen display connected to LAN** when adding devices. See **Restrictions** below.

Connection Diagram



Restrictions

1. Monitor IDs for Daisy-chained displays do not have to start at 1, but must be consecutive.
2. Displays must be configured to use RS-232C control.
3. RS-232C cables must be crossover / NULL modem type.
4. If displays are daisy-chained, they must be added to the device tree using **Add Single Device...** and selecting **This is the first display in a daisy chain.**

Notes

1. Configure COM port in the **LAN to RS232 Bridge** utility. Select 9600 Baud Rate.
2. The Windows computer must be running and the user logged-in in order to communicate with displays.
3. The computer can also be added separately as **Windows computer on LAN (WMI)** to provide shutdown, restart, Wake-on-LAN and monitoring of computer parameters.

NEC large-screen display(s) with LAN hub using LAN to RS232 Bridge

Supported Display Connection Configurations



Configuration Overview

Windows computer with one COM port using **LAN to RS232 Bridge** utility, and connected to a large-screen display via RS232.

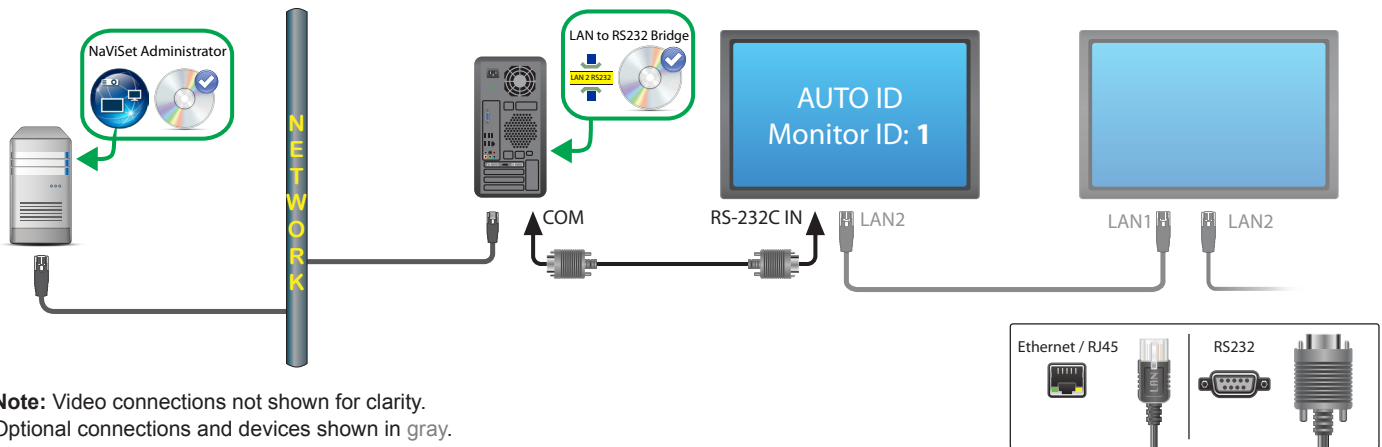
Configuration Features

1. Uses one COM port on the host computer.
2. Additional displays can be daisy chained via LAN.
3. Fast command operation.

Adding device(s) to NaViSet Administrator

Select device type **NEC large-screen display connected to LAN** when adding devices. See **Restrictions** below.

Connection Diagram



Restrictions

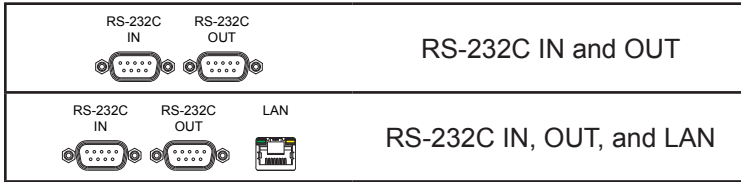
1. Auto ID must be performed on the first display via the display's OSD.
2. RS-232C cable must be crossover / NULL modem type.
3. If displays are daisy-chained, the IP address settings can be set to AUTO. The displays will assign themselves IP addresses automatically. Unique IP addresses can be used also by assigning manually via the OSD.
4. If displays are daisy-chained, they must be added to the device tree using **Add Single Device...** and selecting **This is the first display in a daisy chain**.

Notes

1. Configure COM port in the **LAN to RS232 Bridge** utility. Select 9600 Baud Rate.
2. The Windows computer must be running and the user logged-in in order to communicate with displays.
3. The computer can also be added separately as **Windows computer on LAN (WMI)** to provide shutdown, restart, Wake-on-LAN and monitoring of computer parameters.

NEC large-screen display(s) using RS232 WMI Provider

Supported Display Connection Configurations



Configuration Overview

Windows computer with one or more COM ports using RS232 WMI Provider. Connected to one or more NEC large-screen displays via RS232.

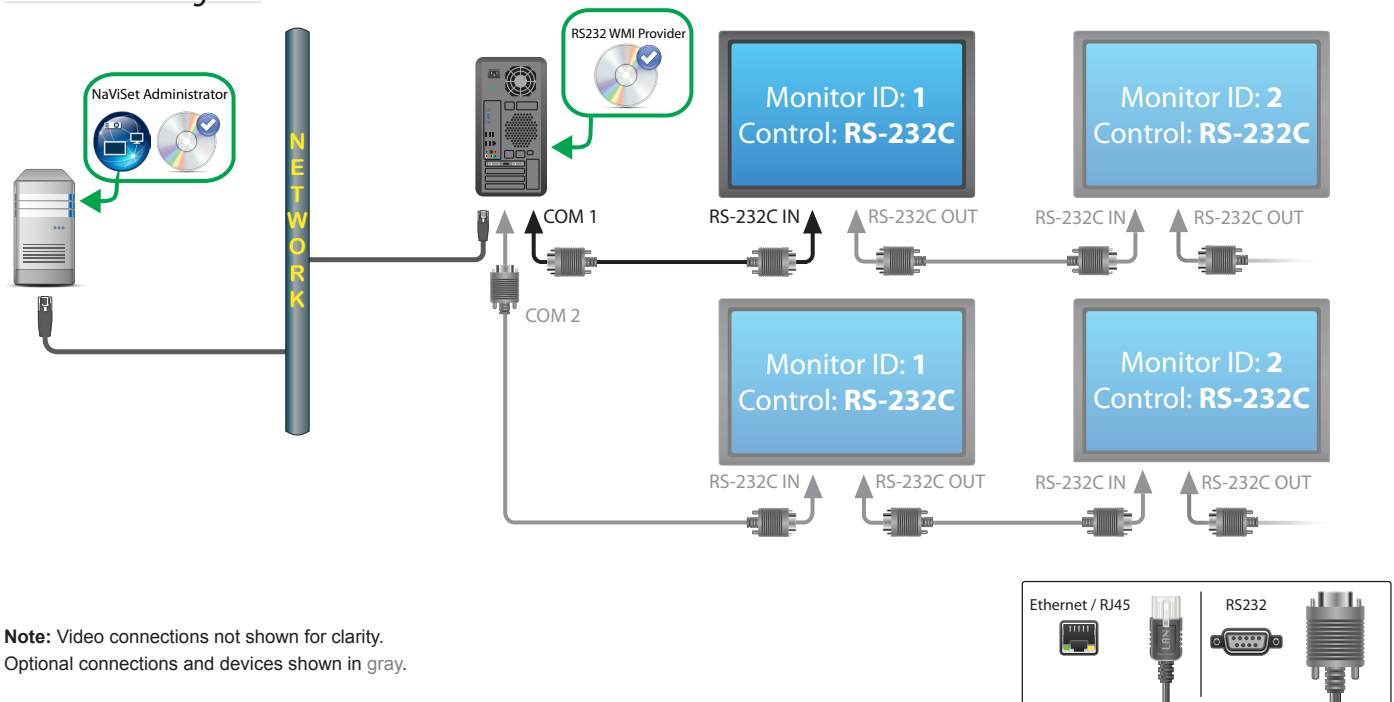
Configuration Features

1. Supports multiple COM ports on the host computer.
2. Displays can be daisy chained via RS232.
3. Supports WMI scripting.

Adding device(s) to NaViSet Administrator

Select device type **Windows Computer on LAN (WMI)** when adding devices.

Connection Diagram



Note: Video connections not shown for clarity.
Optional connections and devices shown in gray.

Restrictions

1. Each display on each daisy chain must have a unique Monitor ID.

2. Configure COM ports and Monitor IDs in the **RS232 WMI Provider configuration utility**. See Appendix E on page 145.
3. RS-232C cables must be crossover / NULL modem type.
4. See "Windows Computer on LAN connections via WMI" on page 48 for important information about configuring WMI.

Notes

1. Monitor IDs do not have to start at 1.
2. Security is provided by WMI access restrictions.
3. The Windows computer must be running in order to communicate with displays.
4. For fastest performance use the **LAN to RS232 Bridge** or direct LAN connection.
5. See Appendix A on page 137 for comparisons between the *LAN to RS232 Bridge* and *RS232 WMI Provider*.
6. The *RS232 Provider* cannot be installed at the same time as the *DDC/CI WMI Provider*.

NEC large-screen display(s) with SBC and dual LAN connections

Supported Display Connection Configurations



Configuration Overview

Large-screen display with SBC (Single Board Computer) connected to the LAN. The large-screen display is also connected to the LAN directly.

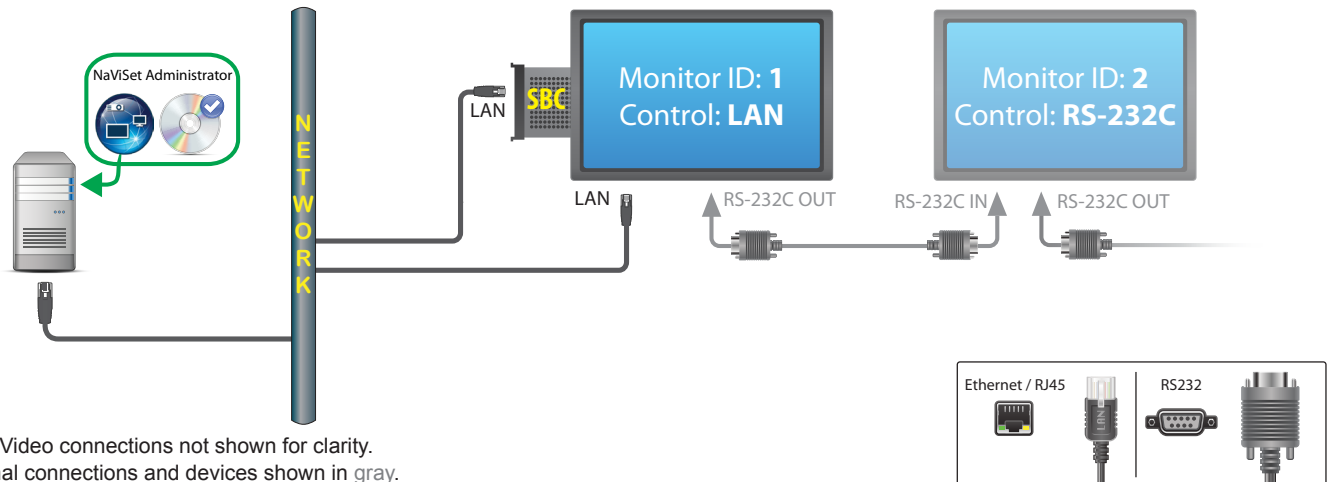
Configuration Features

1. Displays can be controlled even if the SBC is shut down or non-functional.
2. Displays can be daisy chained.
3. The SBC can run operating systems other than Windows.

Adding device(s) to NaViSet Administrator

Select device type **NEC large-screen display connected to LAN** when adding devices. See **Restrictions** below.

Connection Diagram



Restrictions

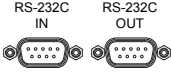
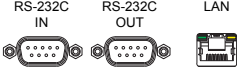
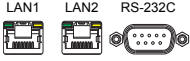
1. Each display on the daisy chain must have a unique Monitor ID, and Monitor IDs must be consecutive.
2. The first display must be configured to use LAN. Others must be configured to use RS-232C control.
3. RS-232C cables must be crossover / NULL modem type.
4. If displays are daisy-chained, they must be added to the device tree using **Add Single Device...** and selecting **This is the first display in a daisy chain**.

Notes

1. Monitor IDs do not have to start at 1.
2. Two IP addresses are required (one for the SBC, and one for the display).
3. The SBC can be added separately to the device tree as **Windows computer on LAN (WMI)** to provide shutdown, restart, Wake-on-LAN, and monitoring of computer parameters.

NEC large-screen display with SBC and single LAN connection

Supported Display Connection Configurations

	RS-232C IN and OUT
	RS-232C IN, OUT, and LAN
	RS-232C IN, LAN1 and LAN2

Configuration Overview

Large-screen display with SBC (Single Board Computer) connected to LAN, also using the internal RS-232C connection to the SBC for communications.

Configuration Features

1. Single LAN connection using one IP address.
2. Can use either **LAN to RS232 Bridge** or **RS232 WMI Provider**.

Adding device(s) to NaViSet Administrator

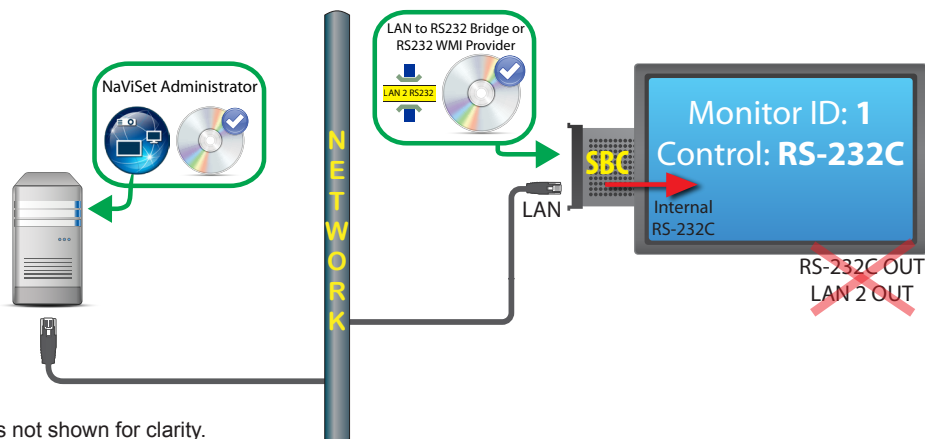
When adding devices, select device type:

NEC large-screen display connected to LAN (if using LAN to RS232 Bridge)

or

Windows Computer on LAN (WMI) (if using RS232 WMI Provider)

Connection Diagram



Note: Video connections not shown for clarity.

Restrictions

1. The **LAN to RS232 Bridge** or **RS232 WMI Provider** must be used.
2. Additional displays can not be daisy-chained from the RS232 OUT or LAN 2 (output) when using the

SBC's internal RS-232C connection.

3. The display must be configured to use RS-232C control unless the display model supports LAN based daisy-chains (Models supporting LAN based daisy-chains have RS-232C IN, LAN1 and LAN2 connectors).
4. Do not use the **DDC/CI WMI Provider** with an SBC. The internal connection to the display supports RS232 communications only.
5. If using the RS232 WMI Provider, see "Windows Computer on LAN connections via WMI" on page 48 for important information about configuring WMI.

Notes

1. Monitor ID does not have to be 1.
2. One IP address is required.
3. The SBC must be running Windows and be operational in order to communicate with display(s).
4. See Appendix A on page 137 for comparisons between the *LAN to RS232 Bridge* and *RS232 WMI Provider*.

NEC projector with direct LAN or wireless connection

Configuration Overview

NEC projector connected to directly LAN or wireless network.

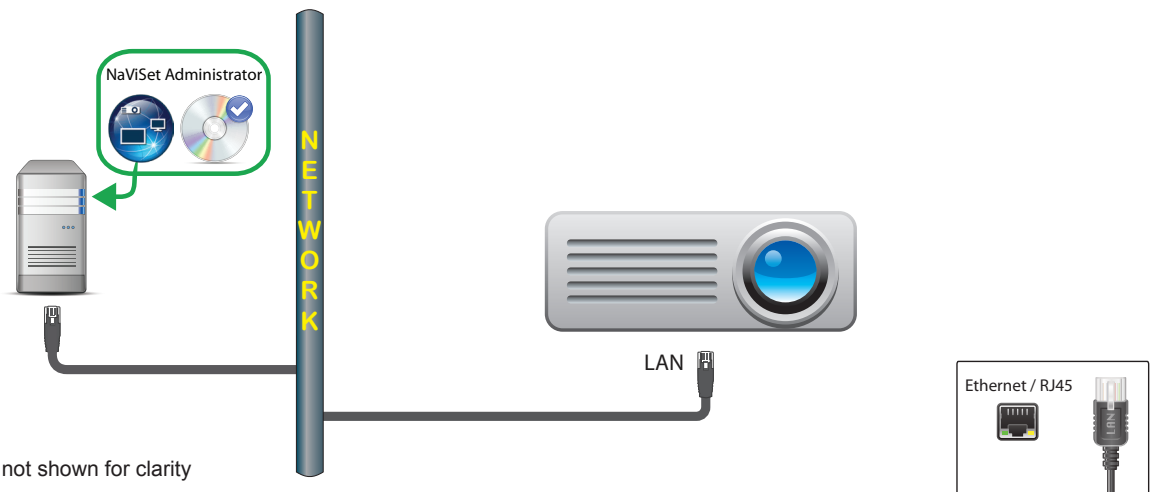
Configuration Features

1. Single LAN connection using one IP address.
2. Operates without a computer.

Adding device(s) to NaViSet Administrator

Select device type **NEC projector connected to LAN** when adding devices.

Connection Diagram



Note: Video connections not shown for clarity

Notes

1. Some projector models require the communications setting to be manually configured between RS232 and LAN via the On Screen Display. Select **LAN** for this configuration.

NEC projector connected via Windows Computer to LAN

Configuration Overview

NEC projector connected to a Windows computer via RS-232C, and the computer is running the **LAN to RS232 Bridge** utility.

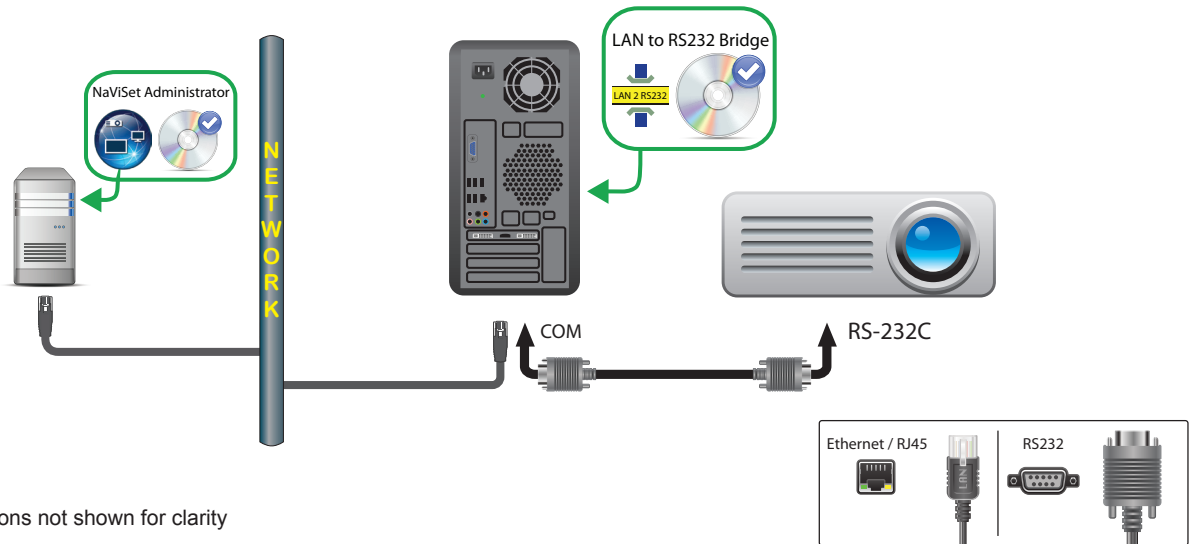
Configuration Features

1. Shared LAN connection using one IP address.
2. Supports projector models without LAN interface.

Adding device(s) to NaViSet Administrator

Select device type **NEC projector connected to LAN** when adding devices.

Connection Diagram



Note: Video connections not shown for clarity

Restrictions

1. Configure the Baud rate in the **LAN to RS232 Bridge** utility to match that of the projector. Available rates are 9600, 19200, and 38400 baud.
2. Some projector models require the communications setting to be manually configured between RS232 and LAN via the On Screen Display. Select **RS232** for this configuration.
3. Configure the RS232 COM Port in the **LAN to RS232 Bridge** utility to the COM port used on the computer.
4. Computers running the **LAN to RS232 Bridge** utility are not able to provide network enumeration of the connected projector. The projector can not be automatically identified on the network using the projector **Enumerate** function in NaViSet Administrator. The IP address or hostname of each computer must therefore be manually entered instead.
5. RS-232C cable must be crossover / NULL modem type.

Notes

1. The Windows computer can also be added separately as **Windows computer on LAN (WMI)** to provide shutdown, restart, Wake-on-LAN and monitoring of computer parameters.
2. The computer must be running and user logged-in in order to communicate with the projector.


Chapter 5

Controlling Devices

Devices can be controlled either interactively on an individual basis using the controls in the *Device Properties* Windows, or in groups as part of a *Task* operation (see “Tasks” on page 76).

To control a device interactively, double-click the device icon in the device tree to open the Device Properties Window, which will contain one or more tabs with information and controls relating to the device.

Read-only displays

Read-only displays, where two-way communications with the display is not available or supported, only have an  *Info* tab, and no interactive controls are available. The information shown from the display is read-only and static, such as serial number, model name, and date of manufacture.


A display may be read-only for one or more of the following reasons:

- The *DDC/CI WMI Provider* has not been installed on the remote Windows computer.
- The *DDC/CI WMI Provider* has been installed on the remote Windows computer; however the video graphics chipset may not support DCC/CI communications with the display.
- The input being used on the display may not support DDC/CI. For example HDMI inputs do not support DDC/CI.
- The display is not a supported model or is not an NEC model.

Interactive Control













For devices that are not read-only, several tabs grouped into different types of controls will be shown. Controls can be adjusted in real-time and the remote device will be updated automatically.

The available controls will depend on the type of device and the connection to the device. NaViSet Administrator will automatically query the device to determine the capabilities and controls available.

 **Note:** *Changes to the settings and controls on a display cannot be made when the device is in the Power Off state. It must first be powered on before making any setting or control adjustments.*

As different tabs are selected, the remote device will be queried to read the latest settings for the controls displayed on the tab. This can take a few seconds to complete. The settings can also be read from the display and updated by clicking the **Refresh** button on a tab.

The following table shows the different types of tabs that can be shown depending on the capabilities of the device selected.

Tab	Description
 Info	A summary of the most common device properties. If a <i>Full Refresh</i> has been performed on the device, all of the supported control settings from the device will be shown.
 Network	Network settings used to connect to the device such as IP address and credentials.
 Power	Power On and Off, and other power related controls. Windows computers include controls for Shutdown, Restart, and System Wake-on-LAN
 Video	Controls for adjusting the video settings such as video input, brightness, color, etc.
 Geometry	Controls for adjusting the positioning and scaling of the video signal on the screen.
 Audio	Audio related controls such as volume.
 Display Schedule	Controls for configuring the internal scheduling function (schedules that run autonomously within the display) in supported large-screen displays.
 POP	Shows all of the Proof of Play events for this device. Controls are also provided for enabling/disabling Proof of Play for this device and start/stopping the Proof of Play task.
 OSD	Controls for configuring settings relating to the On Screen Display
 IR Remote	Used to send commands equivalent to pressing the buttons on the device's IR Remote controller. Available on large-screen displays and projectors.
 ECO	Controls relating to ECO and power saving.
 Custom	Shows a list of all controls available on the device that can be selected and adjusted. This includes more infrequently used controls not shown on other tabs.

Info Property Tab

The *Info* device property tab shows a summary of the essential information about a device, such as the model name, serial number, IP and MAC addresses, and many others depending on the device type.

When a device is first added to the *Device Tree*, the basic information about the device is read and stored in the database.

Information about a device can be refreshed at any time using either the **Standard Refresh** or **Full Refresh** functions (see “Standard Refresh vs. Full Refresh” on page 73 for more details) which are available both on the *Info* device property tab, and from the device tree's context menu, shown by right-clicking on the device.

The date and time the information was last updated is shown in **Last Refresh:**. This text will be shown in red if the device had not been refreshed within the last 24 hours.



The information shown on the *Info* tab can be exported to the clipboard, an Excel spreadsheet, or a delimited text file by clicking the **Export...** button. Also information from individual tables can be copied to the clipboard by first selecting the desired rows in the table, then selecting **Copy** from the **Edit** menu, or by pressing **Ctrl+C**.

Windows Computer Info

The *Info* property tab for remote Windows computer devices show information about the computer such as the operating system, service pack, CPU type, total and available RAM, and if supported by the hardware, the make, model, and serial number of the computer.

The OS version, service pack and architecture are also shown, along with the CPU type, speed, and current usage percentage. The installed physical memory size and currently available memory is shown.

If *Open Hardware Monitor* (see Appendix C on page 140) is installed on the remote computer, the CPU, GPU, and Main Board temperatures and fan speeds will be reported if supported.

Projector or Large-screen Display Info

The *Info* tab includes information such as the model name, serial number, IP and MAC address of the display.

If the display supports Diagnostics reporting, or includes internal temperature sensors, these readings will be shown.

The Power On Time counter value will be shown in both hours and days if supported by the display.

Projectors that support reading the number of hours used and hours remaining on lamps and filters will show this information also.

Desktop Display Info

For a desktop display device, the *Info* tab includes information about the related video graphics system on the computer for the display, such as the display adapter model, driver version, and current video resolution settings.

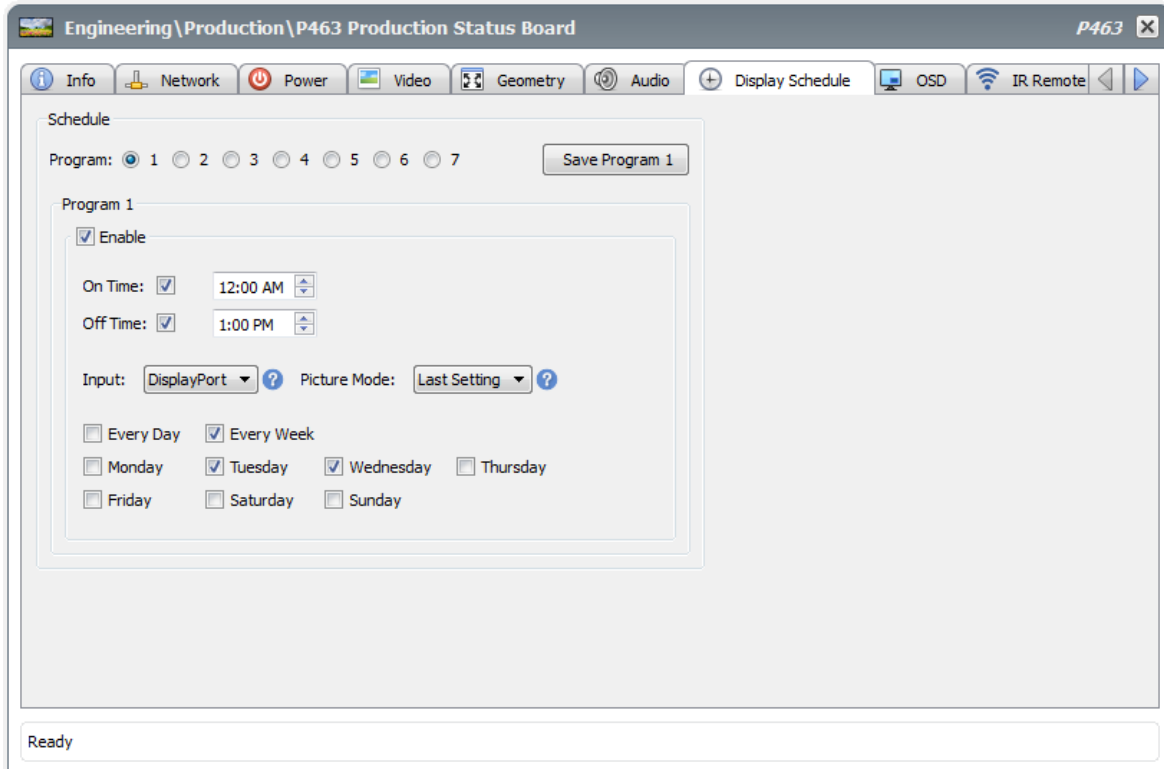
If the display supports Diagnostics reporting, or includes internal temperature sensors, these readings will be shown.

The Power On Time counter, value will be shown in both hours and days if supported by the display.

⊕ Display Schedule Property Tab

This tab is shown when controlling an NEC large-screen display that supports internal schedules (schedules that run autonomously within the display).




The schedule settings can be set for each of the 7 supported internal schedules to power the display on and off, as well as selecting different video inputs at specific times on specific days. Once configured in the display, it will perform the programmed schedule using the internal clock and a connection to NaViSet Administrator will not be needed.



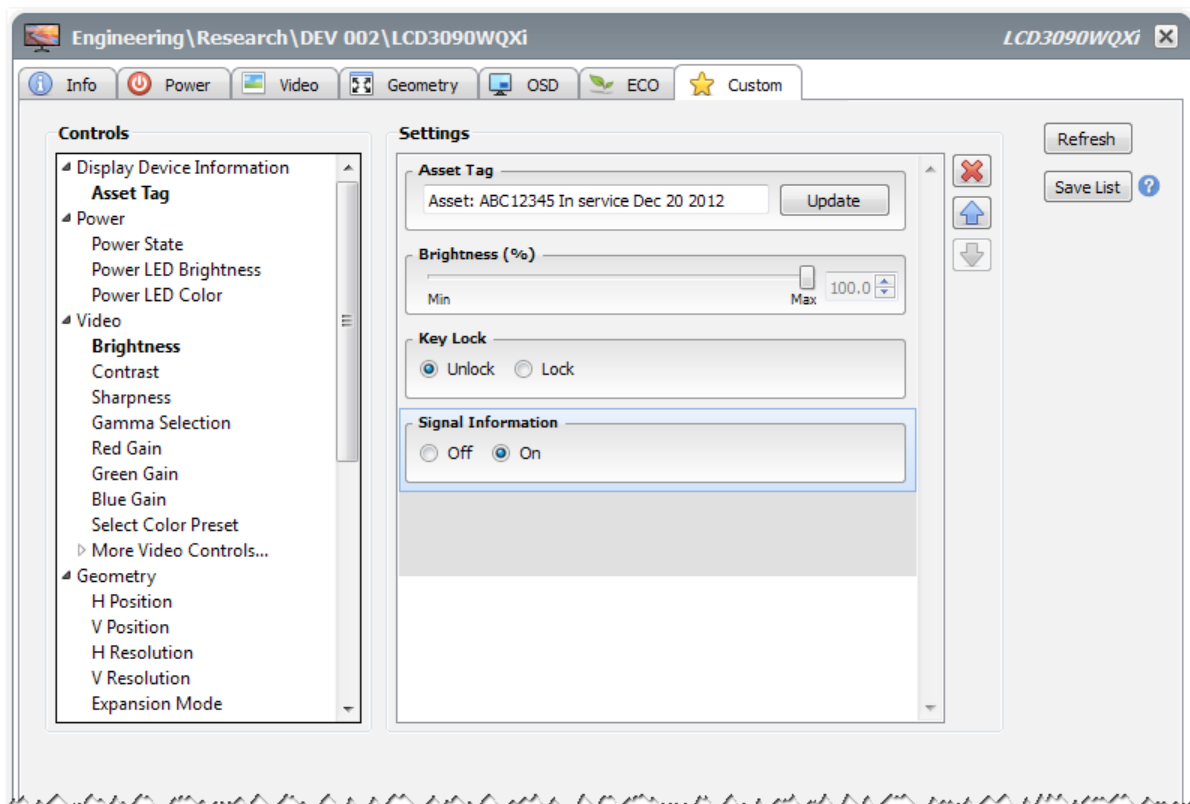
★ Custom Property Tab

The *Custom* device property tab lists all of the controls available on the device that can be adjusted. The list includes more infrequently used controls not shown on other tabs.

To adjust a control, select it from the **Controls** list and it will be added to the **Settings** list shown on the right side. The remote device will be queried in real-time to read the current setting for the selected control. If an adjustment or change is made to a control the new setting will be sent to the remote device and confirmed. This process can take a few seconds to complete.

Multiple controls can be added to the *Settings* list and the order of the list can be changed using the  and  buttons. Settings can be removed from the list by clicking the  button.

The *Settings* list for a device can be saved by clicking the **Save List** button, and the controls shown in the list will be restored the next time the device's Properties Window is opened.

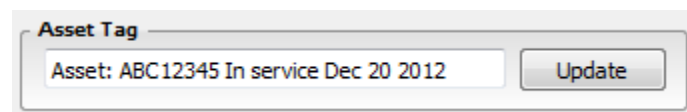


Some of the more unique controls available on the Custom Controls list are shown below.

Asset Tag

A custom text string can be entered and stored in the display. This text string could for example be a conventional asset tracking code, company name, department name, phone number etc. This can then be read by NaViSet Administrator and used for asset tracking over a network. For desktop displays and large-screen displays, this text can normally only be altered or erased by using NaViSet Administrator. On projectors the Asset Tag is known as the Projector Name.

Only ASCII based characters can be entered and the length is limited by the capabilities of the device.



Sync Clock with System Date/Time

For large-screen displays that have an internal clock for performing schedule functions automatically, the clock can be synchronized with the time and date from the local computer. If the display is located in another time zone, the time applied to the display can include an offset value of from -23 to +23 hours relative to the local time. For example to correctly set the clock for a display physically located in a time zone 2 hours ahead of the local time, select an offset of +2 hours, and click Update.

TV Channel

For large-screen displays that have an internal TV tuner, the TV channel can be set using the TV Channel Control. Enter the channel and sub-channel numbers and click **Update** to change. The TV tuner must be selected as the current video input.

Standard Refresh vs. Full Refresh

Standard Refresh will read and update the basic information about a device.

For display devices, this includes items such as:

- Model Name
- Serial Number
- Date of Manufacture
- Diagnostics
- Asset Tag

For desktop displays connected to a Windows computer and accessed via WMI, additional information about the computer and video graphics system, such as the display adapter manufacturer, model, driver version and many more items will be shown.

Full Refresh will perform a Standard Refresh plus read and update information about all of the supported controls and their current setting values. All of the settings read will be listed in the tables on the *Info* tab. Because of the large number of controls supported on many devices, the *Full Refresh* can take over a minute depending on the device and connection type.

Note:

1. Performing a *Standard* or *Full Refresh* will overwrite all of the device information saved in the database from the last *Standard* or *Full Refresh*.
2. Information for devices that are currently powered off can not be fully updated until they are fully powered on and available for remote access.
3. When a *Standard* or *Full Refresh* is performed directly on a Windows computer, any new display devices will be automatically detected and added to the device tree. If an existing device has been disconnected or can no longer be accessed, an option to delete the device will be given.

Chapter

6

Credential Library

About the Credential Library


Access credentials must be specified when connecting to remote Windows computers via WMI. These credentials must be for a user with sufficient access permissions for administering the computer and accessing WMI. The credentials consist of a Username and Password.

Note: *If the user is a member of a different domain than that of the computer, then the username can be specified in the format domain\username.*

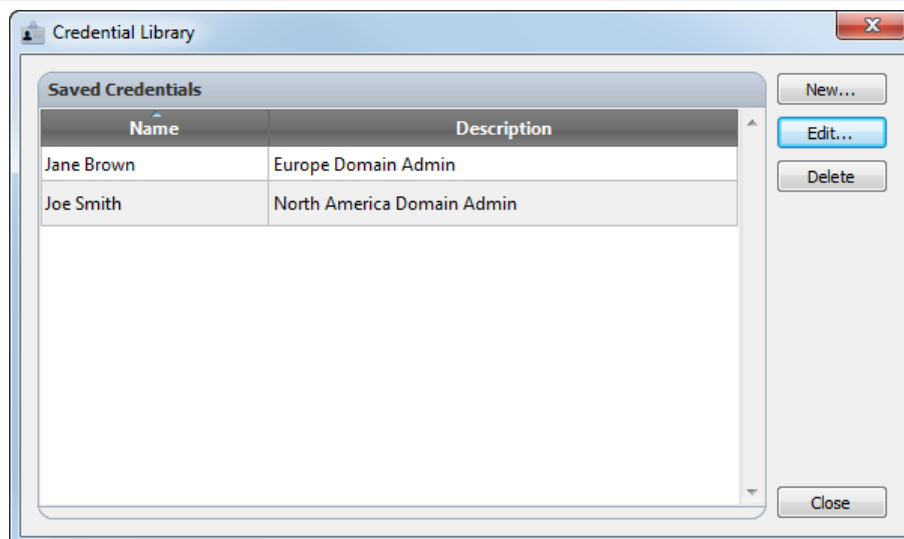
NaViSet Administrator has a *Credential Library* feature for managing credentials and making it easier to store and apply credentials for accessing multiple computers. This saves having to enter the same credentials again each time a new computer is added, or needing to individually update each computer's credentials if the administrator's password or username is changed. The passwords entered are encrypted and stored in the current database file.

Using the Credential Library

The *Credential Library* can be accessed from:

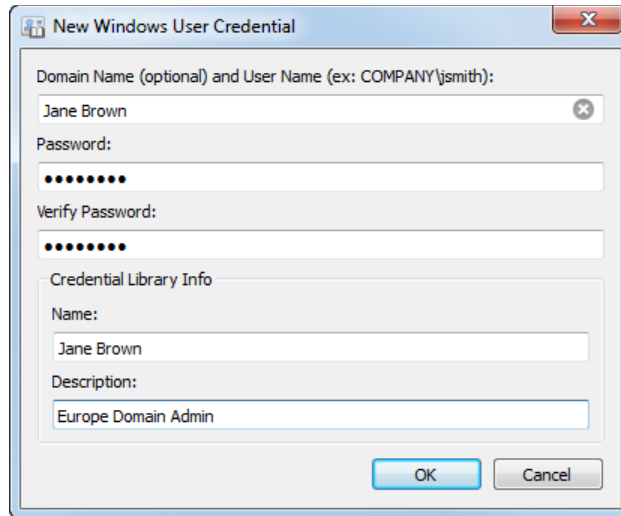
1. The *Devices* menu.
2. The *Credential Library*  button on the toolbar.
3. The *Network* tab of a Windows computer device.
4. When using *Add Single Device* with a *Windows Computer on LAN (WMI)* device type.
5. When adding multiple *Windows Computers (WMI)* in *Add Multiple Devices*.

Note: *Credentials are not used for local connections (connections to the same computer that is running the NaViSet Administrator application). Credentials can be entered for a local connection, however since they aren't used, local connections should not be used to verify administrator credentials.*



Adding a new credential

Click the **New..** button in the *Credential Library* to open the **User Credential Dialog**. The **User name** (with optional domain specifier), **Password**, and name alias and **Description** shown in the Credential Library lists can be entered.



The screenshot shows a dialog box titled "New Windows User Credential". It contains the following fields and text:

- Domain Name (optional) and User Name (ex: COMPANY\jsmith): Jane Brown
- Password: [masked]
- Verify Password: [masked]
- Credential Library Info
 - Name: Jane Brown
 - Description: Europe Domain Admin

Buttons: OK, Cancel

Editing an existing credential

Click the **Edit..** button in the *Credential Library* to open the **User Credential Dialog**. Changes to credentials will automatically be applied to all device connections using the credential.

Deleting an existing credential

Click the **Delete** button in the *Credential Library* to delete a credential from the library.

Chapter 7

Tasks

About Tasks

Tasks are operations that query or perform commands on one or more devices. Tasks can be scheduled to start at particular times or on demand. Tasks can be configured to run once or continue running for a specific period of time and at specified intervals.


There are 4 basic types of task that can be performed in NaViSet Administrator:

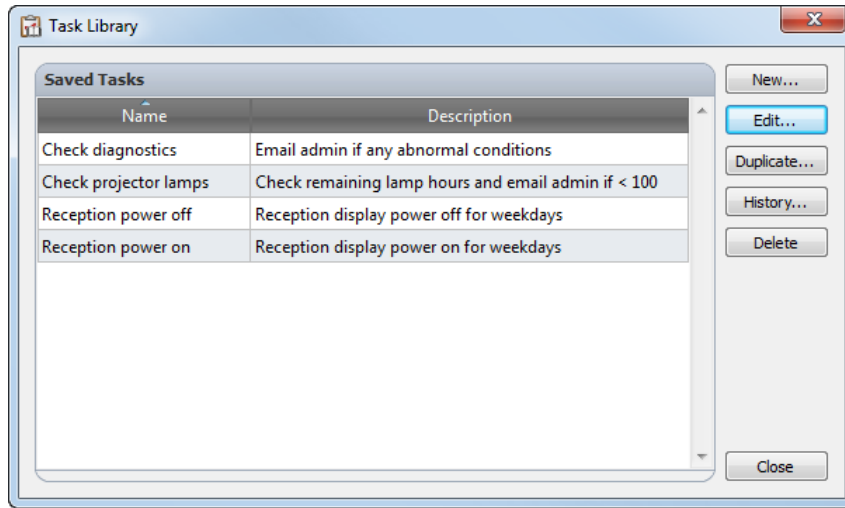
- **Command Tasks:** Change settings or perform operations on devices. For example: Turning the display power on, selecting a particular video input, or selecting a particular channel on the TV tuner. Command Tasks can also be used to create a preset configuration of multiple settings that can be then sent to displays to perform easy configuration.
- **Conditional Tasks:** Read one or more settings or parameters from devices at periodic intervals, and issue alerts if any of the values are outside of a specified range or value, or changes in value. For example an alert can be issued if the internal temperature of a display exceeds a specific value, or if a diagnostic error condition reported by a display.
- **Informational Tasks:** Read one or more settings or parameters from devices at periodic intervals, and displays the readings in real time. An example use would be to continuously monitor the internal temperature of a display.
- **Built-in Tasks:** Special tasks created by the system. These tasks will be visible only if devices that support them exist in the device tree. An example of a built-in task is **Proof of Play**, described at the end of this chapter.

When a Task is run it will attempt to perform the specified operation on each of the devices selected in the Task before completing. For Conditional and Informational type tasks, the task can be set to poll the devices at specific intervals, either indefinitely, or for a specific run time.

The status of running tasks can be monitored in real-time. Upon completion, the result history of every operation is saved in the database for use at a later time. Task history can also be exported to an Excel spreadsheet or delimited text file, or copied to the clipboard.

Task Library

All tasks are managed using the *Task Library*, available on the *Tasks* menu or by clicking the  toolbar button. Tasks can be created, edited, duplicated, and deleted from within the *Task Library*. The execution history of a task can also be viewed and exported.

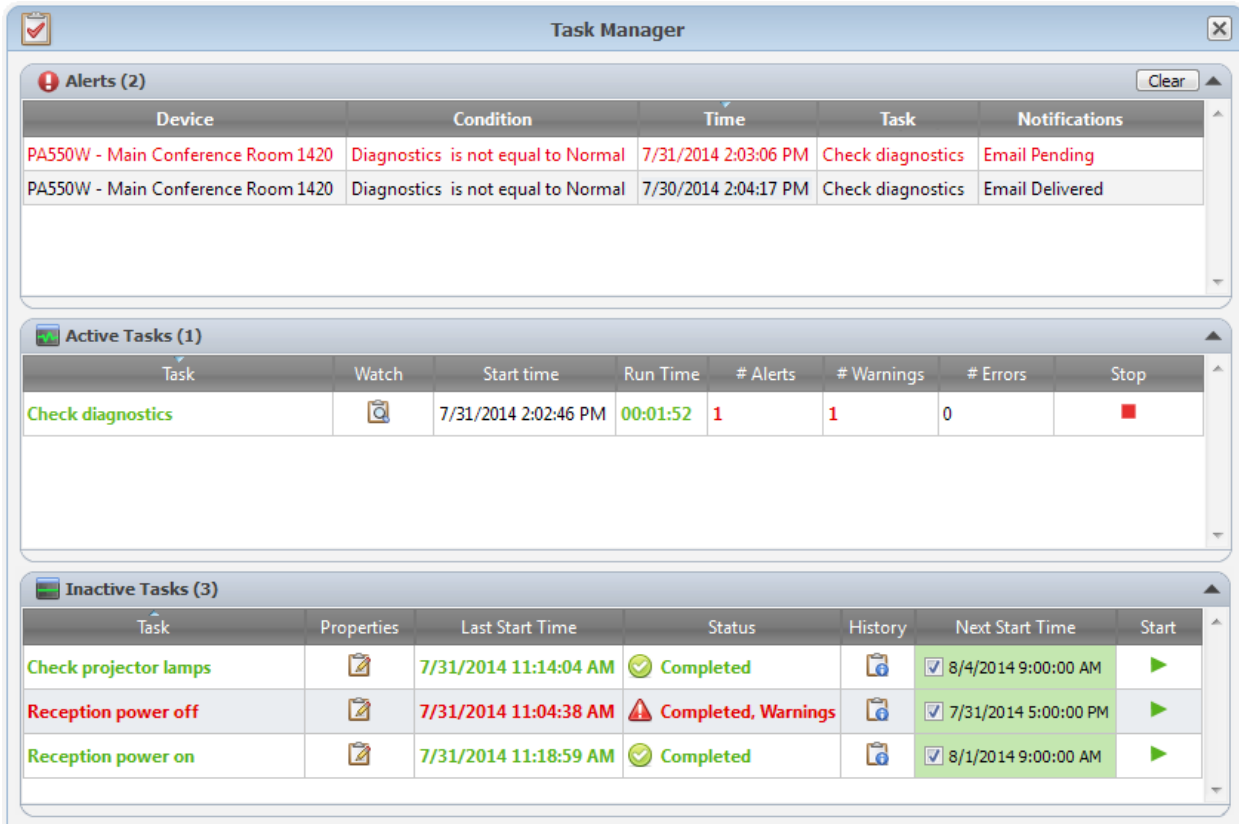


Task Manager


All Tasks in the current database are listed in the *Task Manager* window.


This window shows:

- Tasks that are currently inactive (not currently being processed/executed)
- Tasks that are currently active (being processed/executed)
- Any alert conditions that have occurred while running any tasks




Inactive Tasks list





Inactive Tasks are tasks that are either scheduled to run and are waiting for their start time to occur, or tasks waiting to be started manually. For Tasks that are scheduled to run, the *Next Start Time* is shown with a green background. The checkbox in the *Next Start Time* column can be used to temporarily disable the automatic starting of a task with the schedule. Any task can be made to start immediately by clicking the  **Start** button.

 **Note:** *A task will not start if its task properties dialog is opened at the same time that it is scheduled to start. Instead, it will be rescheduled for the next start time when the dialog is closed.*








The properties of a Task can be edited by clicking on the  **Properties** button. This is the same as editing a task from the *Task Library*.

The history of a task can be viewed by clicking the task  **History** button in an inactive task. This is the same as viewing the history from the *Task Library*. The task history lists the results from each time the task was executed.

For tasks that have executed during the current session, the Status column will include an icon next to the description indicating the overall result status. The text color of the task row will also be changed and made bold. The icons and colors used are as follows:



-  The task completed or was canceled without alerts, warnings or errors. Text will change to green.
-  A lower level warning, such as a control that is not supported by the device. Text will change to brown.
-  The task completed with at least one alert. This icon overrides any additional warnings or errors. Text will change to red.
-  At least one error or one high level warning, such as a device connection failure. Text will change to red.

A context menu providing quick access to common task operations can be opened by right-clicking on the task. The context menu provides these actions:

-  **Library** - Opens the Task Library with the task selected.
-  **Properties** - Opens the Task Properties dialog for review or editing.
-  **Schedule** - Opens the Task Properties dialog with the Task Schedule tab selected.
-  **History** - Opens the Task History Viewer.
-  **Start** - Starts the task.
-  **Clear History** - Permanently deletes all task history information.
-  **Delete** - Deletes the task.

Active Task list



The *Active Task* list shows Tasks that are currently being processed. Tasks that are configured with a schedule to start automatically, will move from the *Inactive Task* list to the *Active Task* list while they are being processed. Once the task has been completed, or is manually stopped, it will return to the *Inactive Task* list again until the next scheduled start time is reached, or it manually started.

While a task is active, the progress of the task can be viewed in real-time by clicking the  **Watch** button. An active task can also be manually stopped by clicking the  **Stop** button.

The number of alerts, warnings or errors that occur while a task is running are shown.

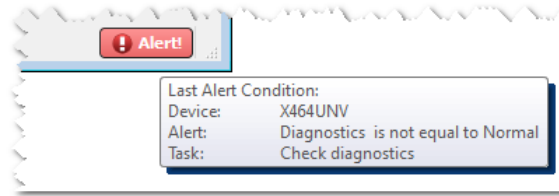
Alerts list

Alerts occur when a condition in a *conditional* type task becomes true. Alerts issued by a task are listed in the *Alert* list. The *Alerts* list shows the task and condition that caused the Alert, the device it occurred on, the time it occurred, and any notifications that were sent.

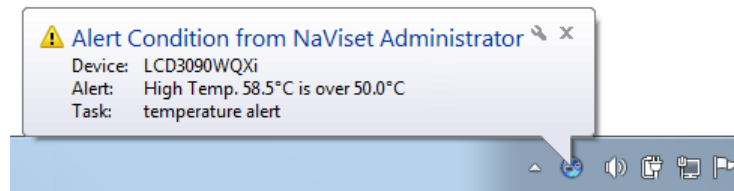
- The Alert list contents can be permanently cleared by clicking the **Clear** button.
- Individual alerts can be deleted by right-clicking on the alert and selecting  Delete.
- The Device Properties window can be opened directly from the Alerts table by right-clicking on the alert and selecting  Device Properties.
- Alerts messages generated during the current application session are shown with red text, and alerts created in previous sessions are shown with normal text.
- More detailed information about a device or a notification can be seen by mousing over the device or notification columns respectively.
- Clicking on a row in the *Alerts* list will automatically select the corresponding device in the *Device Tree*.
- Double-clicking a row while the task is running will open the Task Viewer window and select the row

containing the alert. Similarly, if the task is no longer running the Task History window will be opened.


When an alert is issued, the Alert notification button is shown at the bottom right side of the main application window. Mouse-over the button to view details about the last alert condition. Clicking this button will open the Task Viewer Window and select the alert.





If enabled in the application *Preferences* (see page 110), an Alert will also be shown in a popup message in the Windows Task Tray:



Creating Tasks


Tasks can be created using a step-by-step wizard interface in the *Task Builder Wizard*, available on the *Tasks* menu, or by clicking the  **Task Builder Wizard** button. The wizard offers a guided explanation of each step of creating a task.

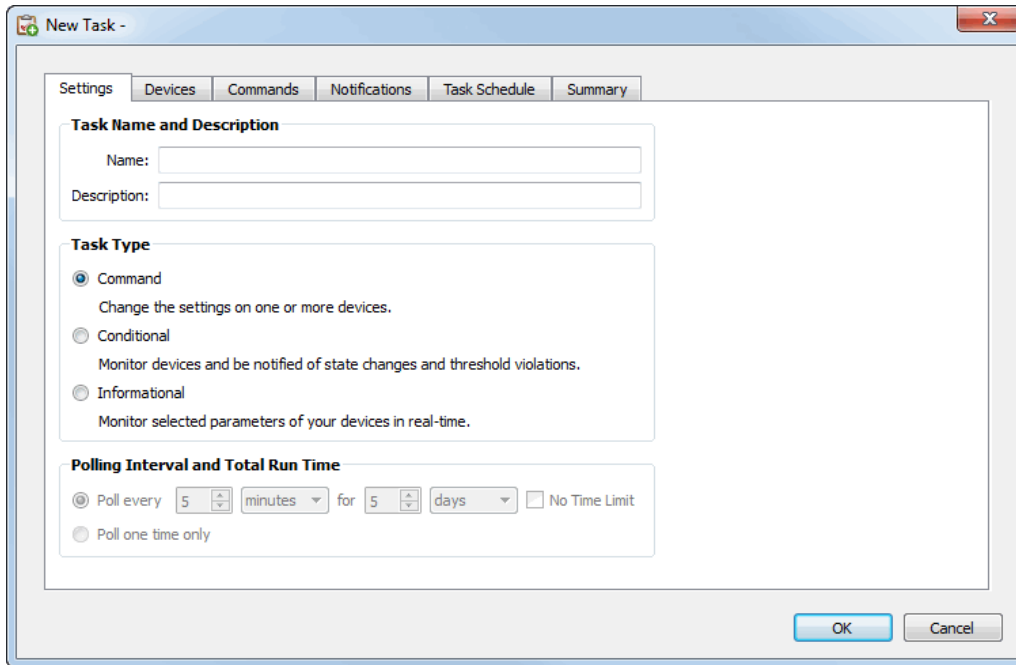
Tasks can also be created directly by selecting **New Task...** on the *Tasks* menu, or by clicking the  **New Task** button, or by selecting **New...** from the *Task Library*.

 **Note:** The **IR Remote** and **Display Schedule** functions are not available when using the *Task Builder Wizard*. To use these functions, create a New task not using the *Task Builder Wizard*.

Creating a New Command Task

Command type tasks perform actions on devices such as changing control settings or performing operations.

Create a new task by selecting **New Task...** from the **Tasks** menu, or selecting **New...** from the **Tasks Library**, or click the  **New Task** button on the application toolbar.




The screenshot shows the "New Task" dialog box with the following details:

- Task Name and Description:** Two text input fields for "Name:" and "Description:".
- Task Type:** Three radio button options:
 - Command**: Change the settings on one or more devices.
 - Conditional**: Monitor devices and be notified of state changes and threshold violations.
 - Informational**: Monitor selected parameters of your devices in real-time.
- Polling Interval and Total Run Time:** Two radio button options:
 - Poll every**: 5 minutes for 5 days. Includes a checkbox for "No Time Limit".
 - Poll one time only**.

Settings Tab

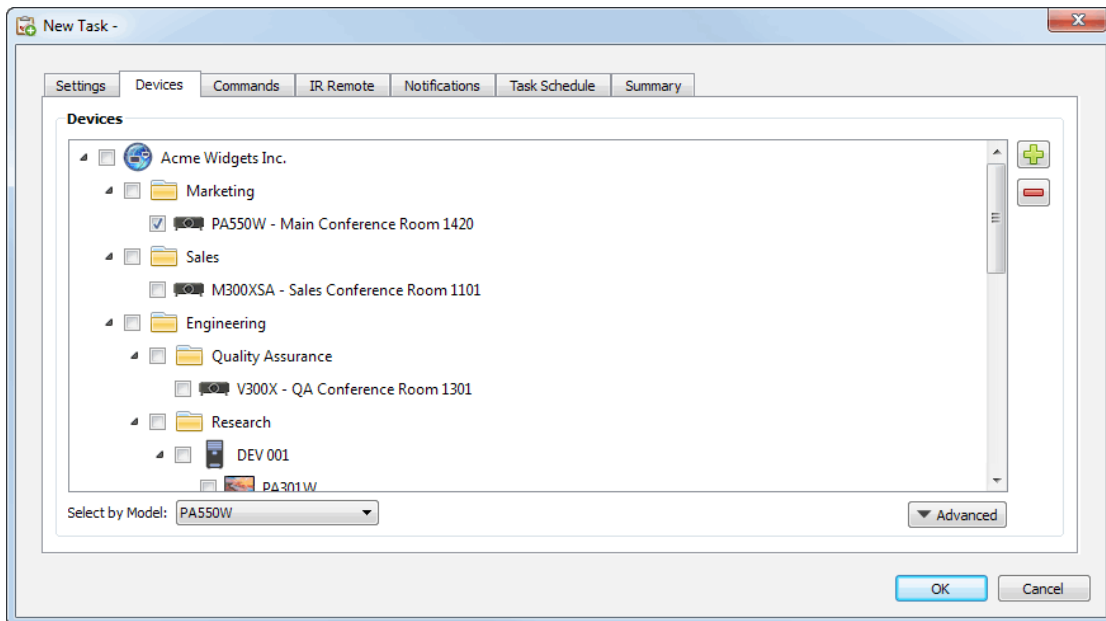
First give the task a name and description so it can be easily identified in the task list.

Next select the type of task to be created.

 **Note:** Command type tasks are only performed one time each time the task run, so the Polling Interval and Total Run Time section is disabled.

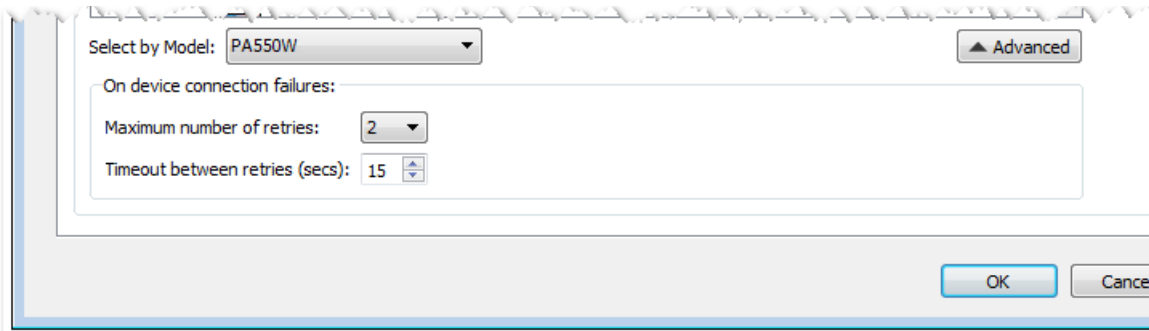
Devices Tab

Next select the **Devices** tab and select at least one device that the task will be performed on. Selecting a group will automatically select all of the devices within that group.



Devices can also be selected by model using the **Select by Model** listbox. Selecting a model in the list will select all matching devices in the device tree. The **+** button will select all devices, and the **-** button will clear all selected devices.

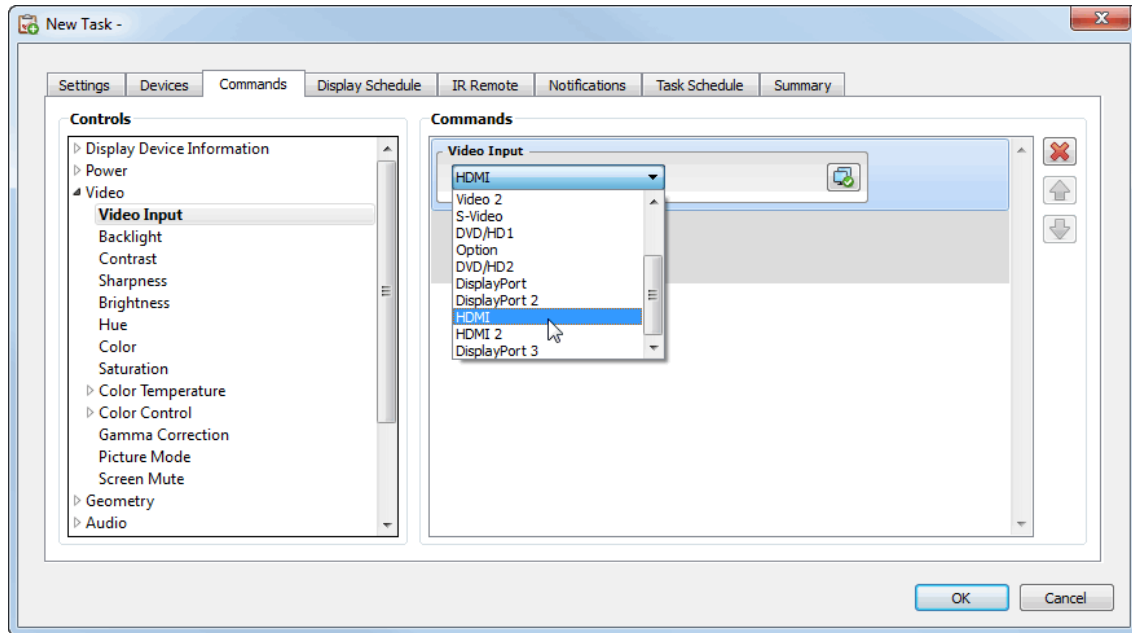
Clicking the **Advanced** button shows additional settings for handling devices in the task.




- **Maximum number of retries** - Select the number of times running tasks and reports should attempt to connect to devices.
- **Timeout between retries** - Enter the number of seconds to wait between each retry.

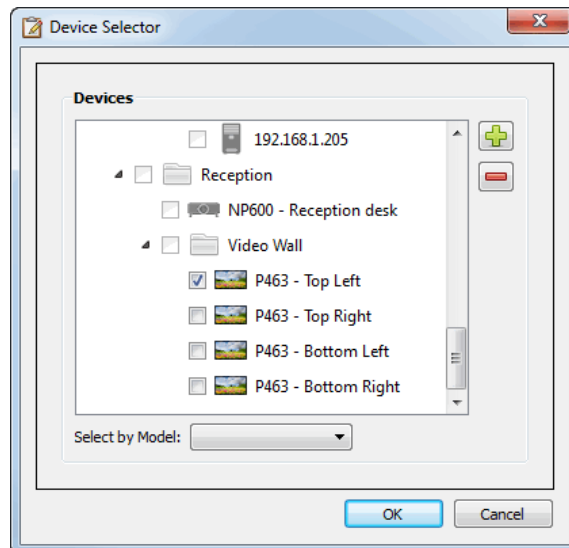
Commands Tab

Next select the **Commands** tab and select a control to be changed or adjusted from the control list. Once the control has been added to the list of commands, the parameters or settings for the control can be set.

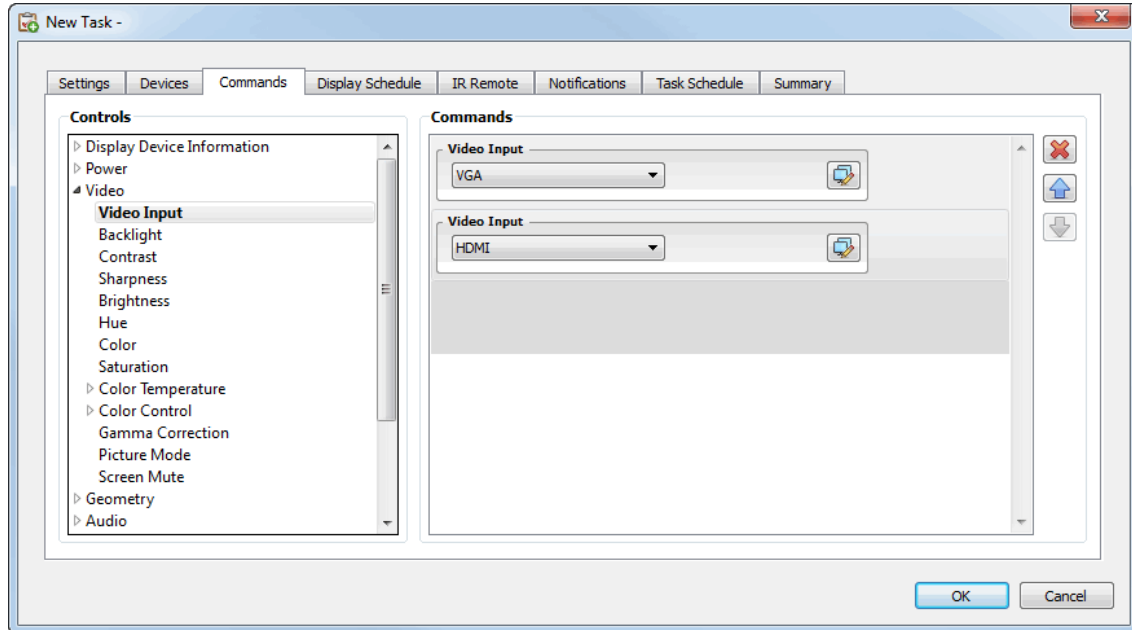


Continue adding other controls to the command list as necessary. By default, each command will be applied to all of the devices selected in the **Devices** tab. Once a control is added, however, a subset of the devices can be selected using the  button.



Clicking the  button for a command opens the **Device Selector** dialog, from which the devices to perform the command on can be specifically selected.



Multiple instances of the same control can be added, each with different devices and settings selected, thus allowing one task to perform different control operations on different devices. See “Example Task: Using Device Specific controls to configure a Tile Matrix” on page 126 for an example of how this functionality can be used.

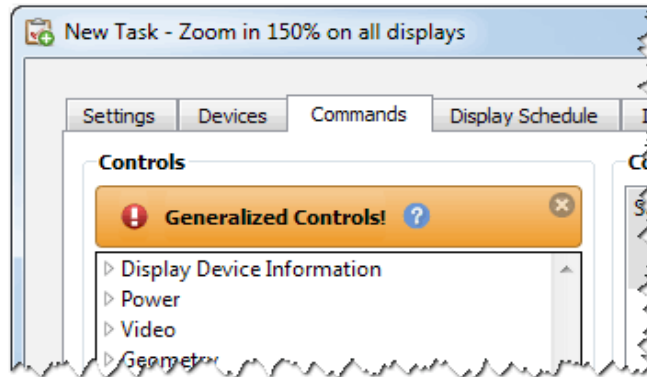


Note:

- The types of controls listed in the Commands tab depends on the types of devices selected.
 - Not all devices support all of the commands and setting values listed.
 - *The task executes the commands one at a time, and in the order they appear in the list. For some commands the ordering may be important, and can be changed using the  and  buttons.*
-

Specific vs. Generalized Controls

NaViSet Administrator allows different types of devices and display models to be controlled in a single task. If a group of devices is selected that are not all of the same model then a generalized version of the controls may be automatically selected. A generalized control set is indicated by an alert window shown over the control list.



Brightness (cd/m²)

40

400

220



Specific controls show the actual values for a device and the units, which closely resemble the device's OSD and User's Manual.

Brightness (%)

Min

Max

50

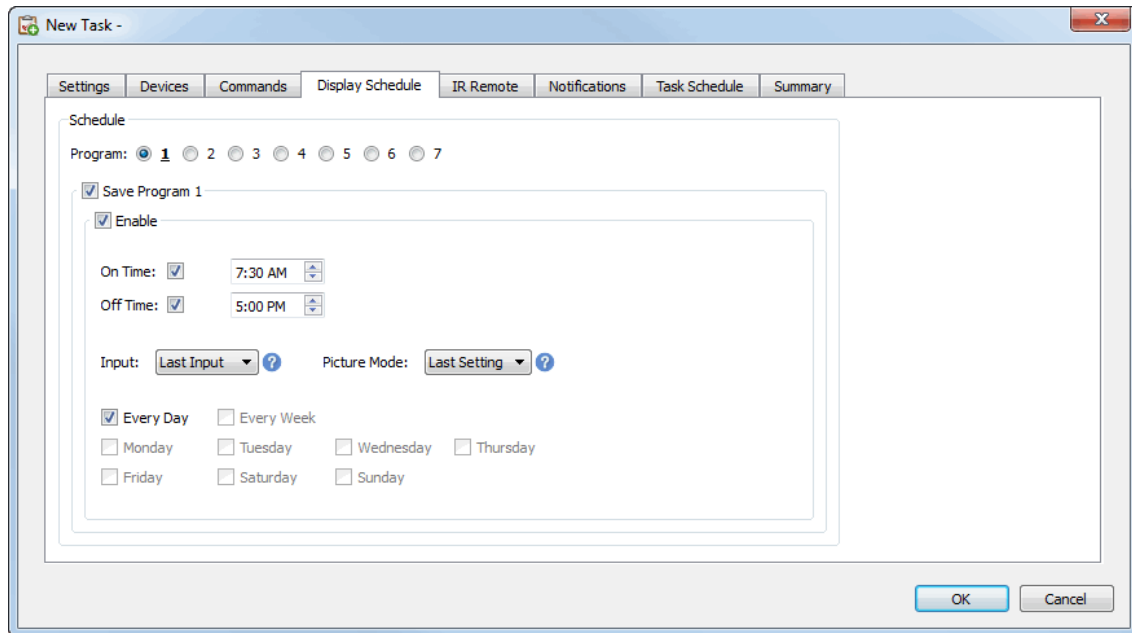


Generalized controls typically use a percentage range from zero to 100, which are then translated to actual values for each device when the task is run.

Note: Except for basic commands such as Power On/Off and Audio Volume, the use of generalized controls should be avoided. This can be done by creating separate tasks that run on similar models and/or types of devices.

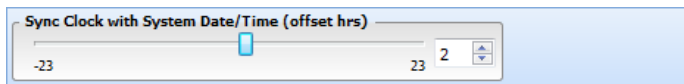
Display Schedule Tab

If one or more of the devices selected is an NEC display that supports internal scheduling (schedules that run autonomously within the display), the *Display Schedule* tab will be shown.



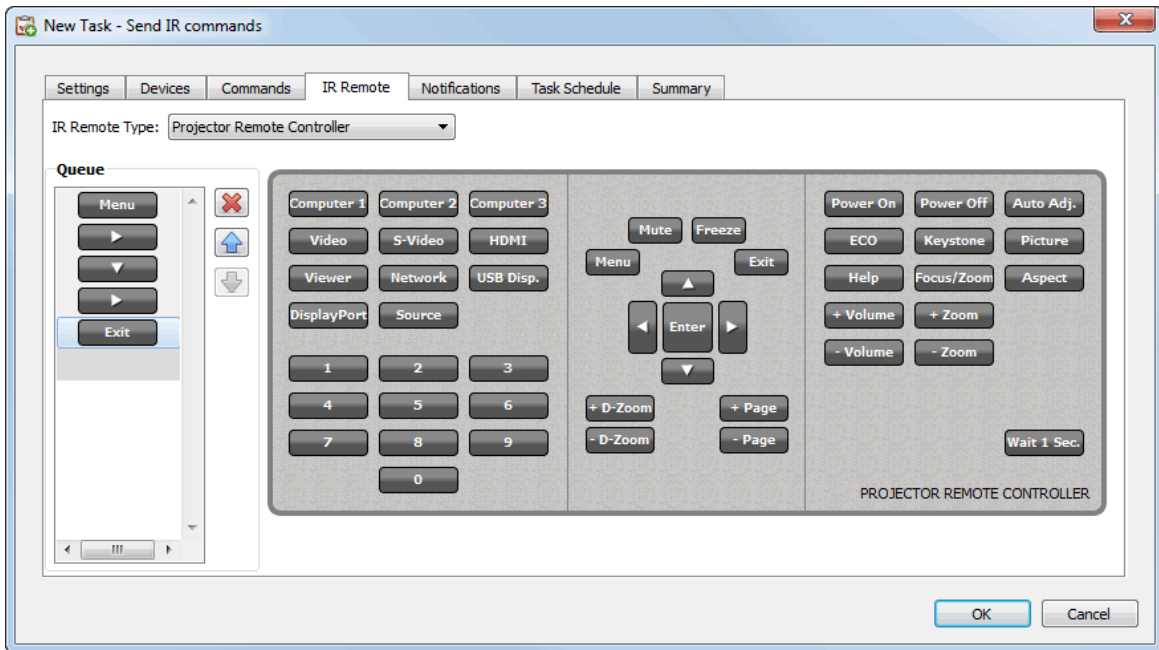
The schedule settings can be optionally set for each of the 7 supported internal schedules to power the display on and off, as well as setting different video inputs at specific times on specific days. When the task is run it will program the selected displays with these schedule parameters. Once the displays have been programmed via the task, it is not necessary to use NaViSet Administrator to perform the same schedule functions since the displays will perform them automatically using the internal clock and scheduling feature.

Note: The display's internal clock can be synchronized to the current date and time by using the Command "**Sync Clock with System Date/Time**" control listed in the **Display Device Information** category. This control allows the display's internal clock to be set with an offset value of from -23 to +23 hours, relative to the local time. This is useful if the display being set is located in a different time zone. So for example to set the internal clock for a display that is located in a time zone two hours ahead of the current local time, set the **Offset hrs** value to 2. All displays in this task will be set using the same offset value, so displays across multiple time zones should be split into separate tasks.



IR Remote Tab




If one or more devices selected supports sending IR Remote control commands, the IR Remote tab will be shown.



Sending IR Remote commands can be used to perform commands and access functions that may not be available via the commands in the Commands tab, but are available on the device's IR Remote control.

There are two types of remote controls, one for large-screen displays, and one for projectors. Select the appropriate type for the device being controlled before adding any commands.

Note: IR Remote Commands for the both display large-screen displays and projectors can not be used together in a task.

Click on the buttons in the simulated *IR Remote* to add them to the queue to be sent by the Task. Once buttons have been added to the queue, the sequence they will be sent in can be rearranged or deleted using the queue arrangement , , and  buttons.

Note: Not all displays support IR Remote commands, and not all supported displays support all of the IR controls shown. No status or warning messages are displayed if a display does not support a particular IR Remote command.

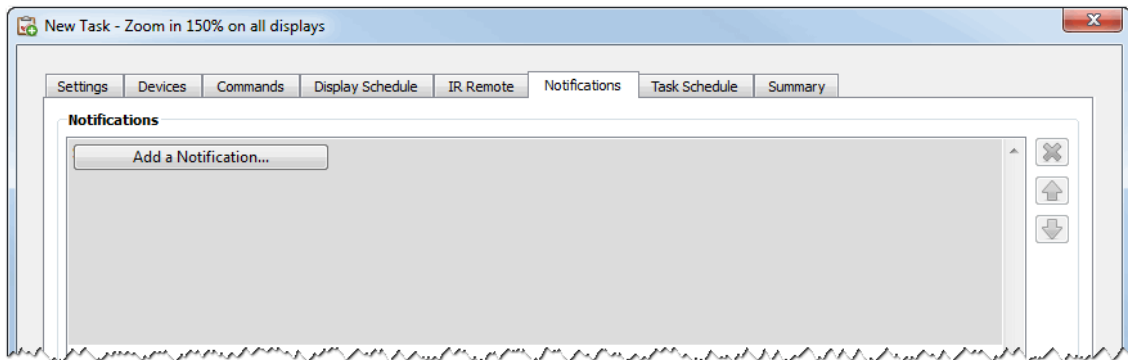
Notifications Tab

Notifications allow the application to inform someone of the status of a task while they are away from the computer that NaViSet Administrator is running on. For example an administrator may want to be notified when a very long task involving a hundreds of devices has completed, or if an error occurred during the operation.

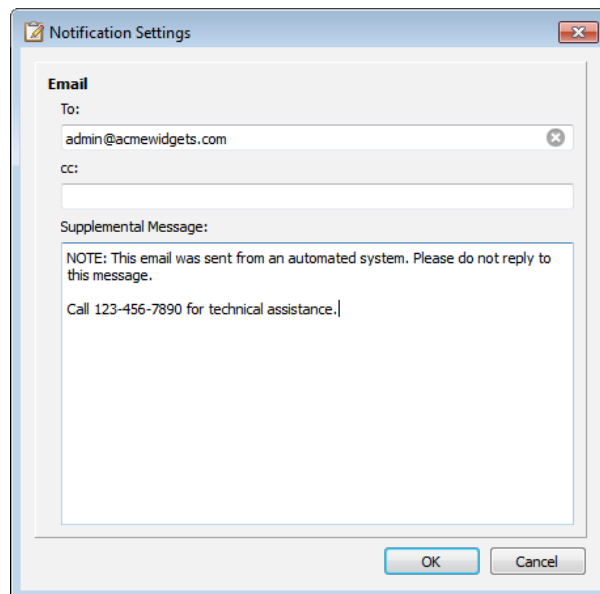
Select the Notification tab to configure the settings to be notified via email about the status of a task.

Note: The **Outbound Email Settings** must be configured and enabled in the application **Preferences** in order for notification emails to be sent.

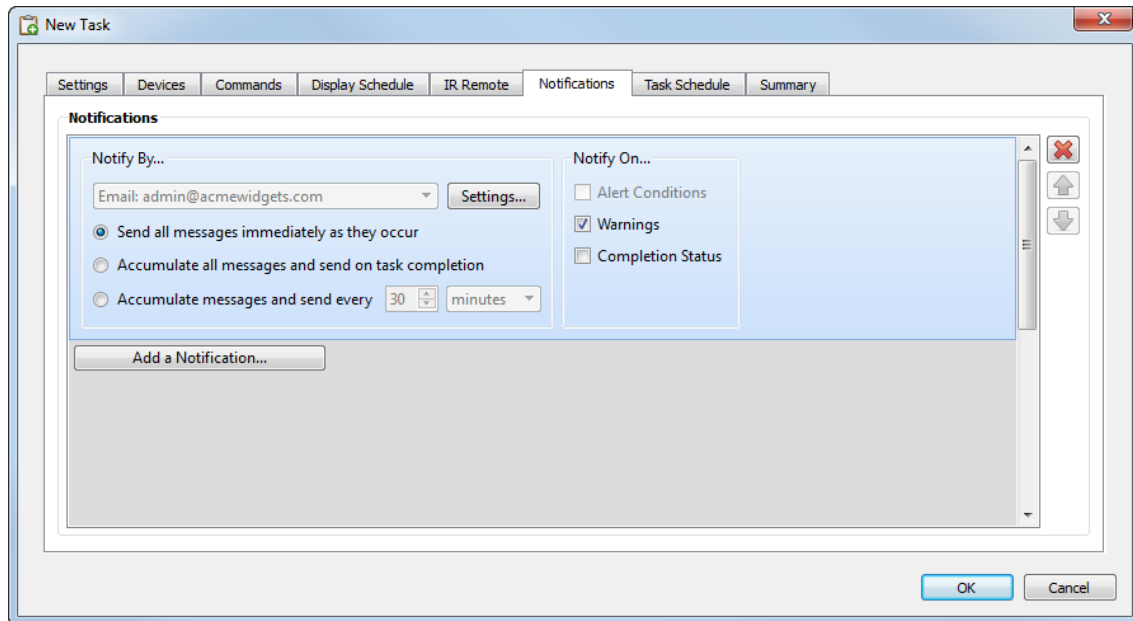
First, click **Add a Notification** and select **Email Message** in the Notification Type list.



In the **Notification Settings** dialog, enter the recipient's email address. Insert a semicolon between addresses if multiple email addresses are required. A supplemental message to be added to the automatically generated message text can also be entered. Click **OK** when complete.



Next select the types of notifications to be sent.



Options are:

- **Alert Conditions** - Are only available when using Conditional type tasks, and are sent when the conditions specified in the task become true.
- **Warnings** - Are sent for the following conditions:
 - Connection error
 - Device might not be powered up
 - Control or setting can not be set or read
 - Task overrun
- **Completion Status** - Is sent once the task has completed.

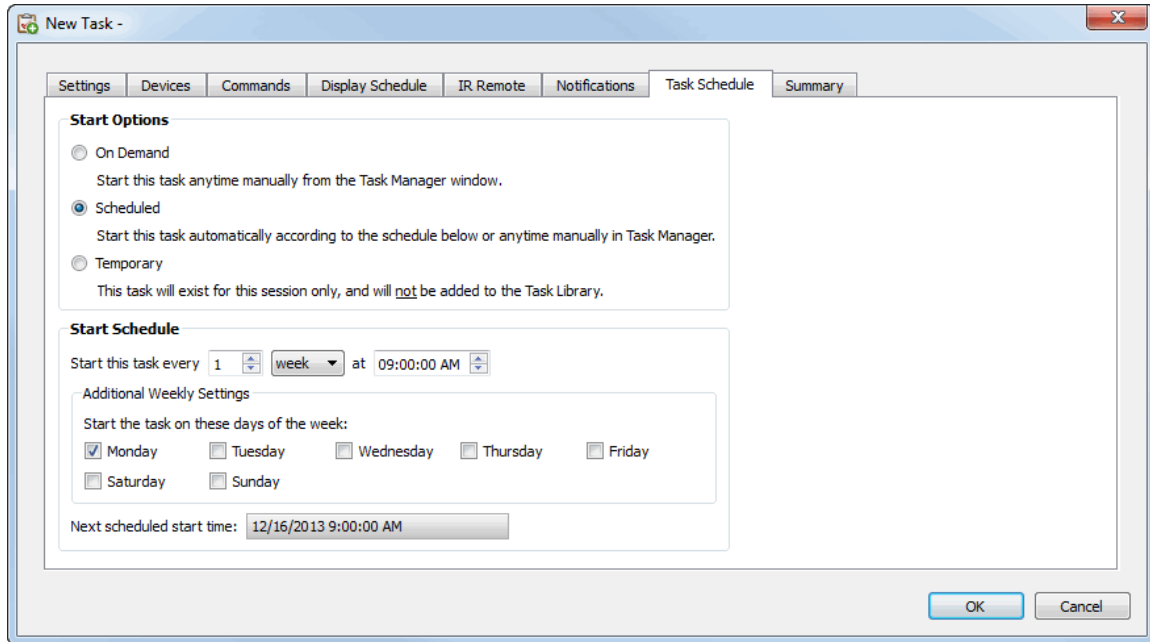
To avoid a possible overwhelming number of messages being sent, message delivery can be controlled as follows:

- Send all messages immediately as they occur
- Accumulate all messages and send on task completion
- Accumulate messages and send every [user definable period]

Note: Multiple notifications can be added to each Task. This is useful if different recipients for different types of notification conditions are necessary. For example one person may only want to be notified when a task completes, but another person may want to be notified if there is any kind of alert or warning when the tasks runs.

Task Schedule Tab

Next click on the Task Schedule tab. This tab is used to set how and when the Task is started. Tasks can be set to run **On Demand** (manually started), or using a **Schedule**, or as **Temporary** (one time task that will not be saved to the Task Library).



To schedule the task to run at specific times or intervals, click **Scheduled** and select the desired **Start Schedule** settings. The next time that the Task will next be automatically started is shown.

Note: A task will not start if its task properties dialog is opened at the same time that it is scheduled to start. Instead, it will be rescheduled for the next start time when the dialog is closed.

Summary Tab

Next, optionally click on the **Summary** tab to review all of the settings for the new task. Click **OK** to add the newly created task to the list of tasks. The new task will be added to the task library and will also be listed in the **Inactive Tasks** table in the **Task Manager**.

Creating Conditional Tasks

Conditional Tasks are created in the same way as other types of Tasks and are typically used to warn of abnormal conditions in a device, or if a particular setting has changed. See the previous example for how to create a new task.

Select **Conditional** as the **Task Type**. Since this type of task is typically used to actively monitor a condition, the **Polling Interval** and **Total Run Time** are enabled and specify how often the condition(s) should be checked while the task is running.

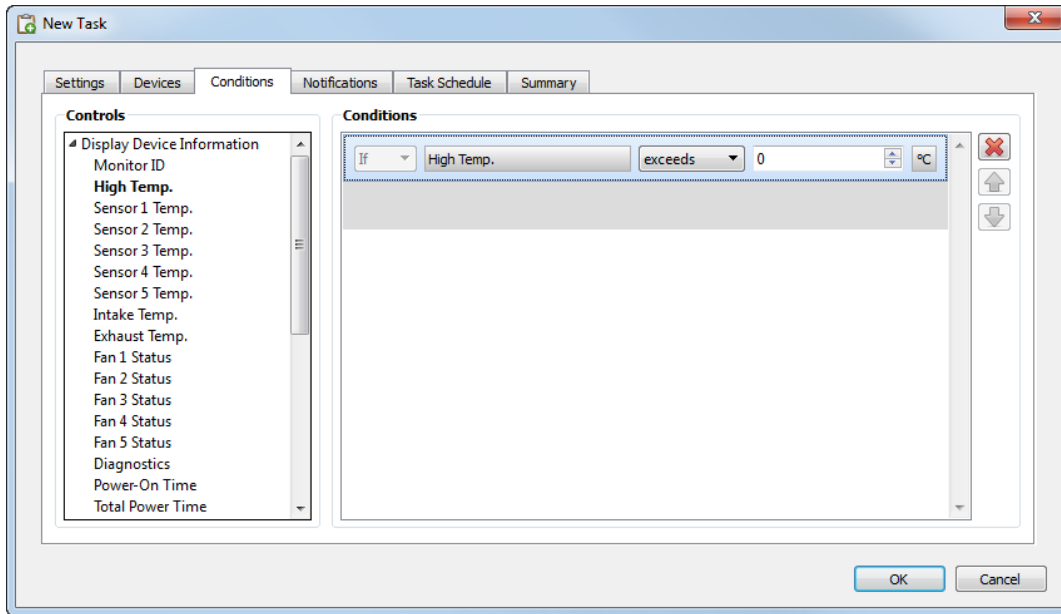
The **Polling Interval** sets how often the devices are polled, and the **Total Run Time** specifies how long the task should keep polling once the task has been started. If the task is to run continuously until it is stopped by the user, select **No Time Limit**. Select **Poll one time only** if the task is to perform just one query and then stop.

Note: Each task takes some time to complete, so care should be taken not to set a polling interval that is shorter than the time it takes to poll all of the devices in the task. If a task is due to poll again before the previous poll has completed, a warning message "Last Query Still Running" will be generated and the polling of all remaining devices will be skipped for that polling interval.

Next select the **Devices** tab and select the devices that the Task will be performed on.

Next select the **Conditions** tab and select device controls that are to be checked. The list of available controls will depend on the type of device(s) selected. Click on a control to add it to the list of conditions.

Note: Not all devices will support all of the controls listed.



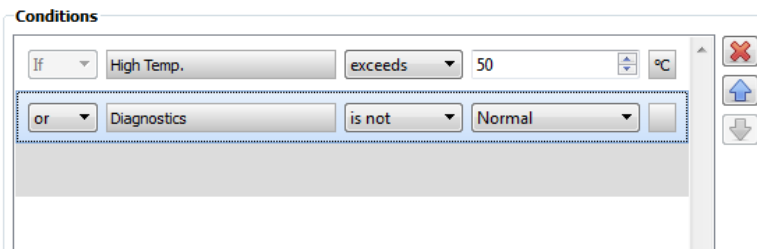
For each control that is added, an associated condition must be set. If this condition is met then a notification and/or alert will be issued. Depending on the type of control selected, different conditions will be available.

Control Value Type	Available Conditions	Examples
Numerical value	Exceeds, Falls Below, and Changes	Temperatures, Fan Speed, Human Sensor, Ambient Light Sensor
Binary or Named value	Is, Is Not, and Changes	Diagnostics, Video Input, Power State

Info: A **named value** is a control setting that has discrete selections, for example the Video Input control has named values of "Video", "HDMI", "DisplayPort" etc. A **binary** value has two states, such as "On" and "Off".

Note: The same limitations on control values as described in the Note on page 84 applies to Conditions. The values used to evaluate conditions may be different from the On Screen Display values.

If more than one condition is added, the operand used to evaluate the alert condition can be selected. **AND** and **OR** operands are available. These operands apply to all conditions applied in the task.



If a selected device doesn't support a control, a warning will be issued when the tasks runs on the device. Next select and complete the **Notification** and **Schedule** tabs in the same way as the previous example. Click **OK** to add the newly created task to the list of Inactive Tasks.

Creating Informational Tasks

Informational Tasks are created in the same way as other types of Tasks and are used to actively monitor one or more device parameters.

Select **Informational** as the **Task Type**.

The screenshot shows the 'New Task' dialog box with the following configuration:

- Task Name and Description:** Name and Description fields are empty.
- Task Type:**
 - Command: Change the settings on one or more devices.
 - Conditional: Monitor devices and be notified of state changes and threshold violations.
 - Informational: Monitor selected parameters of your devices in real-time.
- Polling Interval and Total Run Time:**
 - Poll every 5 minutes for 5 days. No Time Limit.
 - Poll one time only.

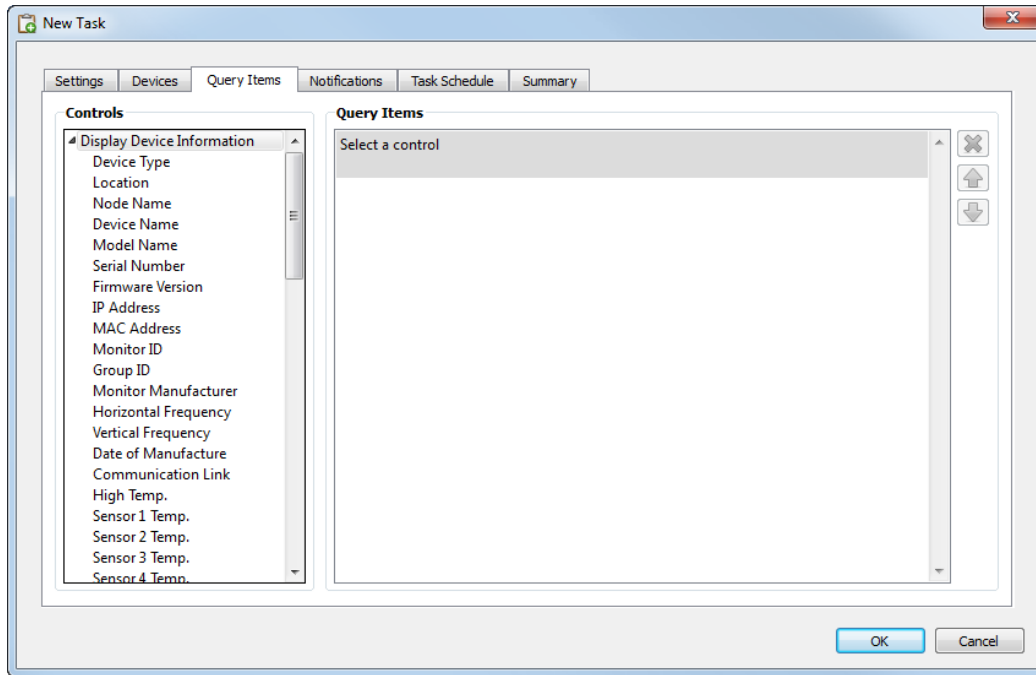
Since this type of task is typically used to actively monitor a parameter, the **Polling Interval** and **Total Run Time** are enabled and specify how often the condition(s) should be checked while the task is running.

The **Polling Interval** sets how often the devices are polled, and the **Total Run Time** specifies how long the task should keep polling once the task has been started.

Note: Each task takes some time to complete, so care should be taken not to set a polling interval that is shorter than the time it takes to poll all of the devices in the task. If a task is due to poll again before the previous poll has completed, a warning message "Last Query Still Running" will be generated and the polling of all remaining devices will be skipped for that polling interval.

Next select the **Devices** tab and select the devices that the Task will be performed on.

Next select the **Query Items** tab and select device controls that are to be monitored.

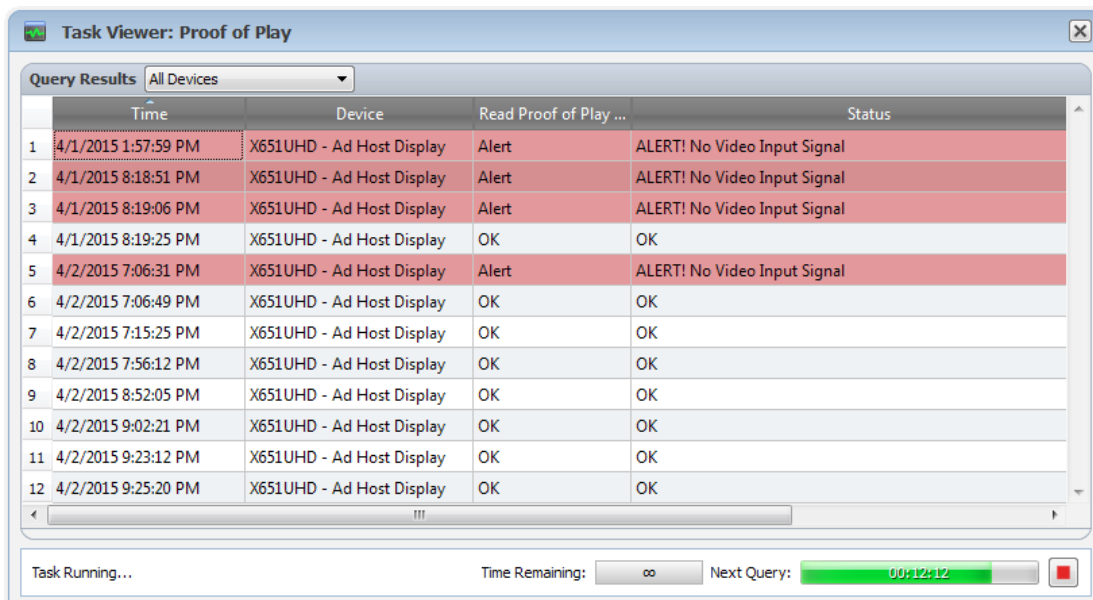


Note: The list of available controls will depend on the type of device(s) selected. Not all devices will support all of the controls listed. The same limitations on control values as described in the Note on page 84 applies to the control values read from devices. The values shown may be different from the On Screen Display values.


Next select and complete the **Notification** and **Schedule** tabs.

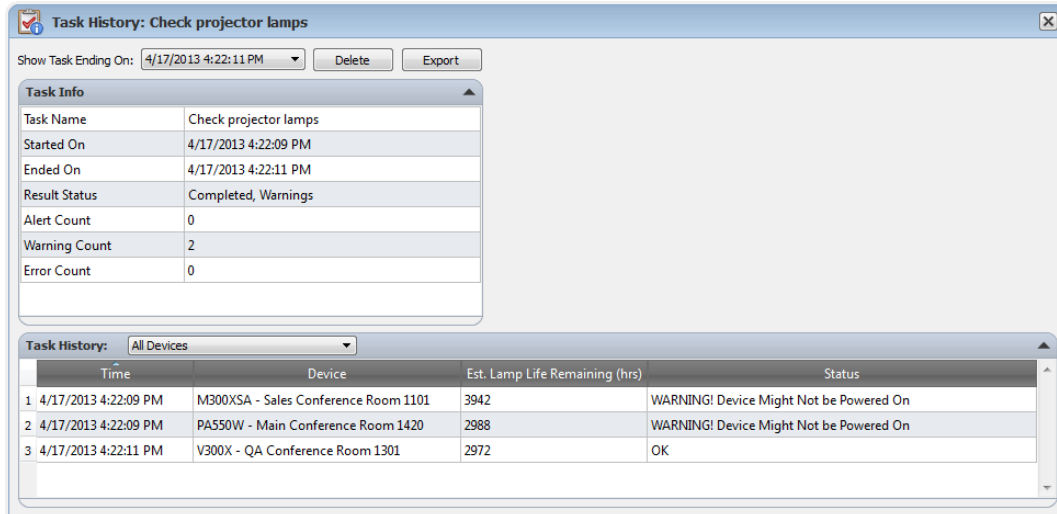
Click **OK** to add the newly created task to the list of tasks.

While any task is running, the results can be viewed in real time by clicking the **Watch** button in the **Active Task** list. A **Task Viewer** window will be opened that shows each device and query. The queries for individual devices can be filtered by selecting the device from the **Query Results** list.



Task History

The *Task History* window shows the operation history for a particular Task. To view the Task History, click the  button for a task in the *Inactive Tasks* list, or select the desired tasks and click *History...* from the *Task Library* dialog.



The history for each time the task has been run can be selected in the **Show Task Ending On:** list. The **Task Info** list shows a summary of the task results, including the number of alerts, errors and warnings that were encountered. The **Task History** list shows the results for each device in the task. The list can be filtered by device name by selecting a device from the listbox.

Note:

- More detailed information about a device in the list can be seen by mousing the cursor over the *device* column.
- Clicking on a row will automatically select the corresponding device in the *Device Tree*.
- Double-clicking a row will select the device and open the Device Properties window for the device.

The history for the currently selected task run can be exported via the clipboard, Excel or delimited text file by clicking the **Export** button.

The history for the currently selected task run can also be deleted by clicking the **Delete** button.

Proof of Play

Some NEC large-screen display models have the ability to detect and record to an internal event log, any changes which have an affect on the audio or visual content being presented such as a change in video or audio input, or loss of video or audio signal, or a detectable internal failure. This event log provides verification and reassurance that the display was powered on and correctly showing a particular video input at a particular time. This feature is called **Proof of Play**.

Note: *Not all large-screen displays support Proof of Play. See the README files for details. For the operations described in this section to be enabled at least one device that supports Proof of Play must exist in the device tree.*

Whenever one of these changes occurs it is saved within the device along with the date and time and a number of other status parameters. Collectively, this is referred to as a **Proof of Play Event**.

Note: *Each event is time stamped using the display's internal Real Time Clock (RTC), allowing direct comparisons to be made with media playlists, and other events. So it is important to make sure that the RTC is set correct. This can be done via a Task described in "Sync Clock with System Date/Time" on page 73.*

Because the display itself creates a log for each internal event that occurs, it is not necessary to continuously poll each display in order to try and detect an event as it occurs. The log in each display can be read at much larger intervals – thus reducing the network burden.

A Proof of Play Event consists of the following data:

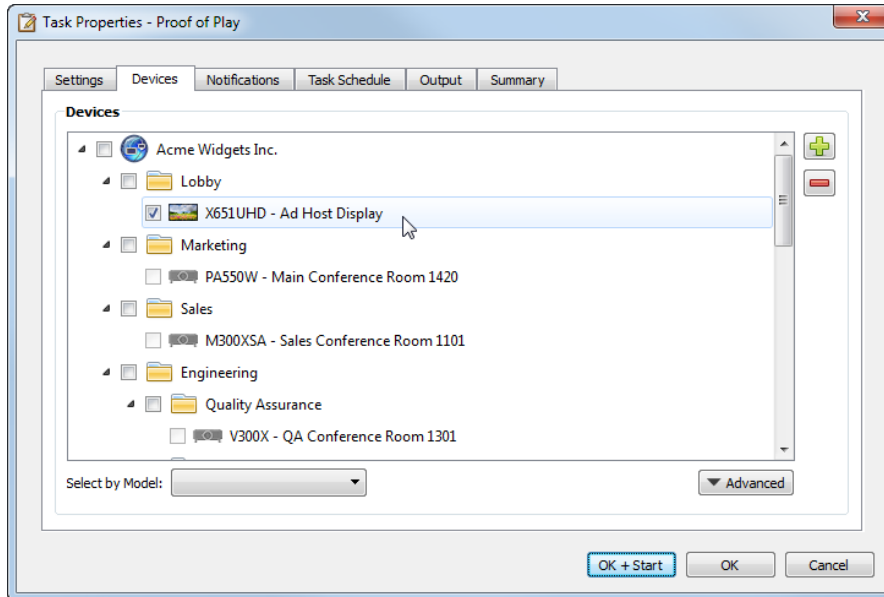
Status Parameter/Setting	Examples
Date/Time	3/30/2015 9:17:05 AM
Video Input	DVI, HDMI1
Video Resolution	1920x1080, 1280x720
Video Signal	OK, No Signal
Video Status	OK, Circuit Failure
Audio Input	HDMI1, HDMI2
Audio Signal	OK, No Signal
Audio Status	OK, Circuit Failure

NaViSet Administrator provides a special built-in task for managing Proof of Play operations and tools for viewing and exporting Proof of Play Events.


Configuring Proof of Play

Proof of Play is configured using the **Proof of Play Task Properties** dialog, opened by selecting **Proof of Play...** in the **Tasks** menu.

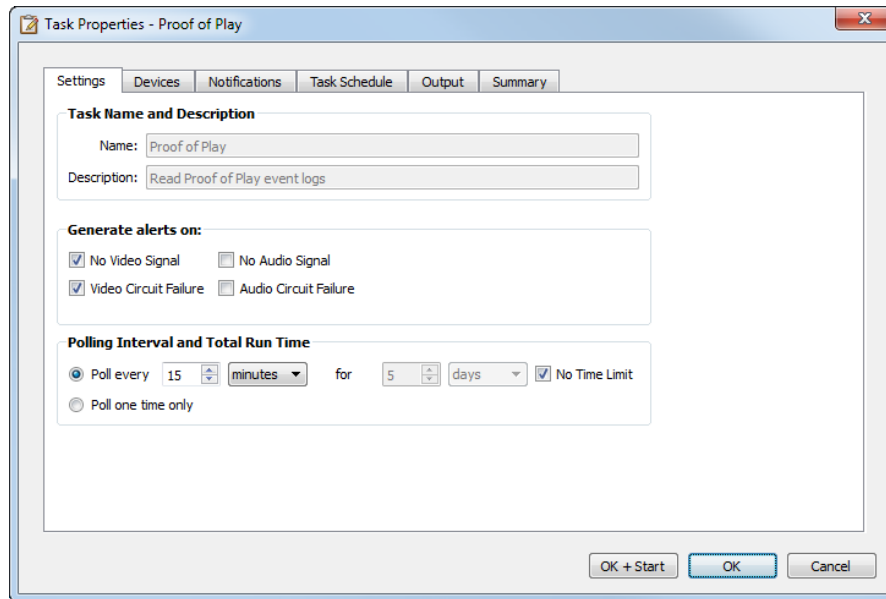
When the dialog is opened for the first time, the **Devices** tab will be selected. Select one or more devices or groups of devices to include. Only those devices that support Proof of Play will be enabled.



Note: The selection of one or more devices is all that is required to start using Proof of Play. The remaining settings described in this section are optional.

In the **Settings** tab, select the conditions in which to trigger alert messages, should they occur. See “ Alerts list” on page 79 for more information about alerts.

- **No Video Signal** - No video input signal detected
- **Video Circuit Failure** - The device hardware failed to produce a picture
- **No Audio Signal** - No digital audio input signal detected
- **Audio Circuit Failure** - The device hardware failed to produce sound



The **Polling Interval** sets how often the devices are polled, and the **Total Run Time** specifies how long the task should keep polling once the task has been started. If the task is to run continuously until it is stopped by the user, select **No Time Limit**. Select **Poll one time only** if the task is to perform just one query and then stop.

Determining Polling Time Interval

There is a limit to the number of Proof of Play events a device can store internally. Whenever this limit is reached the device simply replaces the oldest event with the newest one. When configuring Proof of Play it is important to consider the polling time interval to ensure no events are overwritten within the display before they are polled by NaViSet Administrator.

Important points to consider:

- NaViSet Administrator has no limit to the number of events that can be stored in the database.
- A single poll will read all of the events currently stored in the display.
- All of the events stored in the display will be erased after each poll.
- The Proof Of Play events in the display will be lost if AC power is removed, or if the display is turned off. Displays should therefore be polled before sending a Power Off command.

The default polling interval of 15 minutes should be reduced in the following cases:

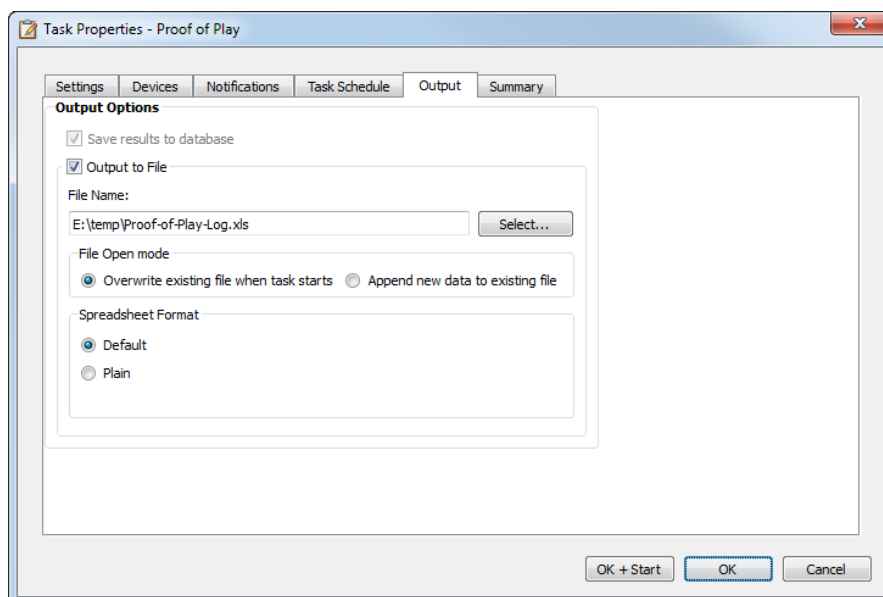
- The expected number of event changes of any device can exceed approximately 100 events every 15 minutes.
- Users need to be notified of alert conditions sooner than (up to) 15 minutes after the alert condition occurs.

The default polling interval of 15 minutes can be extended in the following cases:

- The above issues are not a concern.
- The time to query all of the devices can exceed 15 minutes. This can occur with high numbers of devices or when other tasks are running concurrently.

Proof of Play records can be output to a text file or Excel spreadsheet as they are read (in real-time). In the **Output** tab, check **Output to File**, click **Select...** and select a file name and type. The following file formats are supported:

- Excel spreadsheet in .xls or .xlsx format
- Tab delimited text file
- Comma delimited text file



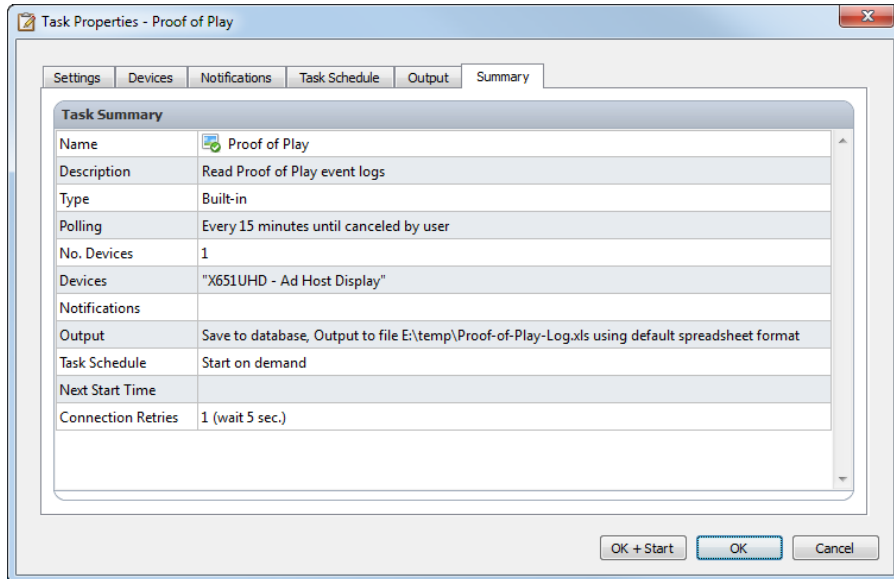
Choose **Overwrite existing file when task starts** to create a new output file every time the task is started. If the file already exists it will be deleted. To append new records to an existing file, select **Append new data to existing file**.

If a spreadsheet file type is selected, the formatting of the spreadsheet can be set to either Default or Plain. The Default formatting applies cell coloring to make data easier to read.

Select the **Notifications** tab to configure the settings to be notified via e-mail about the status of the task. See "Notifications Tab" on page 88 for more information.

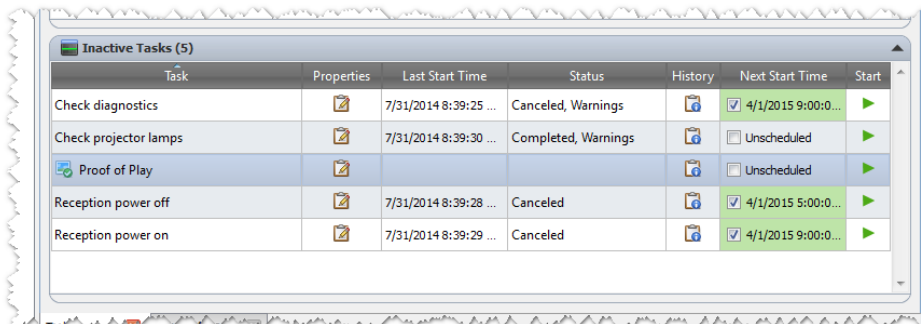
Select the **Task Schedule** tab to set how and when the task is to be started. See page "Task Schedule Tab" on page 90 for more information.

Click the **Summary** tab at any time review all of the current settings.



Click **OK** to save the settings and close the dialog box. Click **OK + Start** to start the Proof of Play task immediately after the dialog box is closed.






Once configured, the Proof of Play task will be visible in Task Manager and operates like any other task in NaViSet Administrator.



Event Log Window

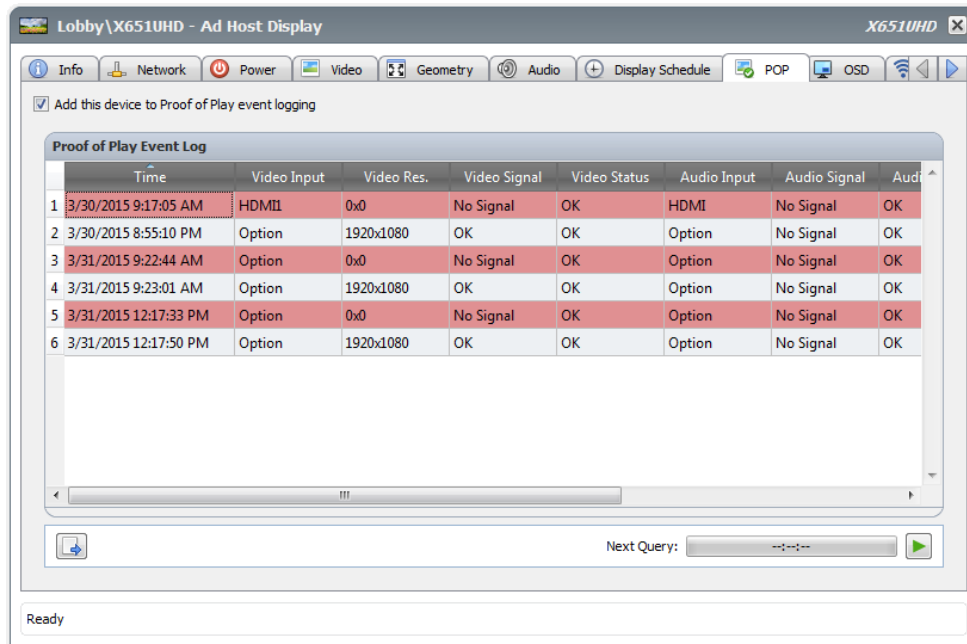
The **Proof of Play Event Log** window shows all events currently stored in the database. The task can also be started and stopped from this window. To open the Proof of Play Event Log window, select **Proof of Play Event Log** in the **View** menu.




	Time	Device	Video Input	Video Res.	Video Signal	Video Status	Audio Input	Audio Signal	Audio Status	Messages
1	3/30/2015 9:17:05 AM	X651UHD - Ad Ho...	HDMI	0x0	No Signal	OK	HDMI	No Signal	OK	ALERT! No Video Input Signal
2	3/30/2015 8:55:10 PM	X651UHD - Ad Ho...	Option	1920x1080	OK	OK	Option	No Signal	OK	OK
3	3/31/2015 9:22:44 AM	X651UHD - Ad Ho...	Option	0x0	No Signal	OK	Option	No Signal	OK	ALERT! No Video Input Signal
4	3/31/2015 9:23:01 AM	X651UHD - Ad Ho...	Option	1920x1080	OK	OK	Option	No Signal	OK	OK
5	3/31/2015 12:17:33 PM	X651UHD - Ad Ho...	Option	0x0	No Signal	OK	Option	No Signal	OK	ALERT! No Video Input Signal
6	3/31/2015 12:17:50 PM	X651UHD - Ad Ho...	Option	1920x1080	OK	OK	Option	No Signal	OK	OK
7	3/31/2015 6:48:12 PM	X651UHD - Ad Ho...	Option	0x0	No Signal	OK	Option	No Signal	OK	ALERT! No Video Input Signal
8	3/31/2015 6:48:30 PM	X651UHD - Ad Ho...	Option	1920x1080	OK	OK	Option	No Signal	OK	OK
9	3/31/2015 7:37:36 PM	X651UHD - Ad Ho...	HDMI	1920x1080	OK	OK	HDMI	OK	OK	OK
10	3/31/2015 7:37:38 PM	X651UHD - Ad Ho...	HDMI	0x0	No Signal	OK	HDMI	OK	OK	ALERT! No Video Input Signal
11	3/31/2015 7:37:54 PM	X651UHD - Ad Ho...	HDMI	1920x1080	OK	OK	HDMI	OK	OK	OK
12	3/31/2015 9:38:18 PM	X651UHD - Ad Ho...	HDMI	0x0	No Signal	OK	HDMI	No Signal	OK	ALERT! No Video Input Signal
13	3/31/2015 9:38:22 PM	X651UHD - Ad Ho...	HDMI	1920x1080	OK	OK	HDMI	OK	OK	OK
14	4/1/2015 12:00:20 PM	X651UHD - Ad Ho...	HDMI	0x0	No Signal	OK	HDMI	No Signal	OK	ALERT! No Video Input Signal

- Rows containing alert messages will have a red background.
- To show the events for only one device, select the device from the drop-down list located near the upper-left corner of the window.
- Click  to open the Proof of Play Task Properties dialog.
- Click  to open the Export dialog.
- Click  to clear the table and permanently delete all Proof of Play events from the database.
- Click  and  to start and stop the Proof of Play task.
- Double-clicking on a row will open that device's properties window to the POP tab page, where the matching row will be automatically selected.

POP Tab

For devices supporting Proof of Play, a **POP** tab will be included in the tab bar of the Device Properties Window. The POP tab page is similar to the event log window, but show the events only for that device.



- Check the Add this device to Proof of Play event logging box to add this device to the Proof of Play task, or uncheck to remove the device.
- Click  to open the export dialog.
- Click  and  to start and stop the POP task.

Chapter 8

Reports

About Reports

Reports are operations that gather selected setting values and information from one or more devices, and create a report of the results.


These operations can be performed either in real-time (meaning devices are queried when the operation is run), or using information stored in the database for each device. A hybrid query that will only query devices if the data in the database is older than a given time period can also be specified. This option is useful to reduce unnecessary real-time queries on devices, since they are much slower than querying the database.

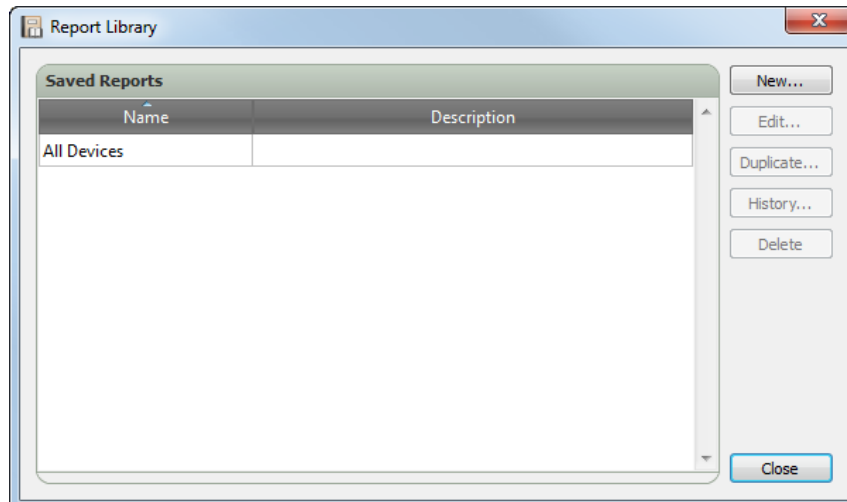
The results of a report can be saved to the database, and also to an output file such as an Excel spreadsheet, or delimited text file. When saved to the database, the report results can be viewed at any time using the *Report History* viewer. Report results are stored for each time a report is generated and each can be selected, thus providing a history of the report over time.

Example uses of reports are:

- Keeping track of computers and displays within an organization, by logging the device name, model, serial number and asset tags.
- Keeping track of the number of operating hours that displays have been in use, the carbon savings, or any other parameter or supported setting that can be read from a device.

Report Library

All Reports can be managed using the *Report Library*, available on the *Reports* menu, or by clicking on the  toolbar button. Reports can be created, edited, duplicated, and deleted from within the *Report Library*. The execution history of a report can be viewed and exported.

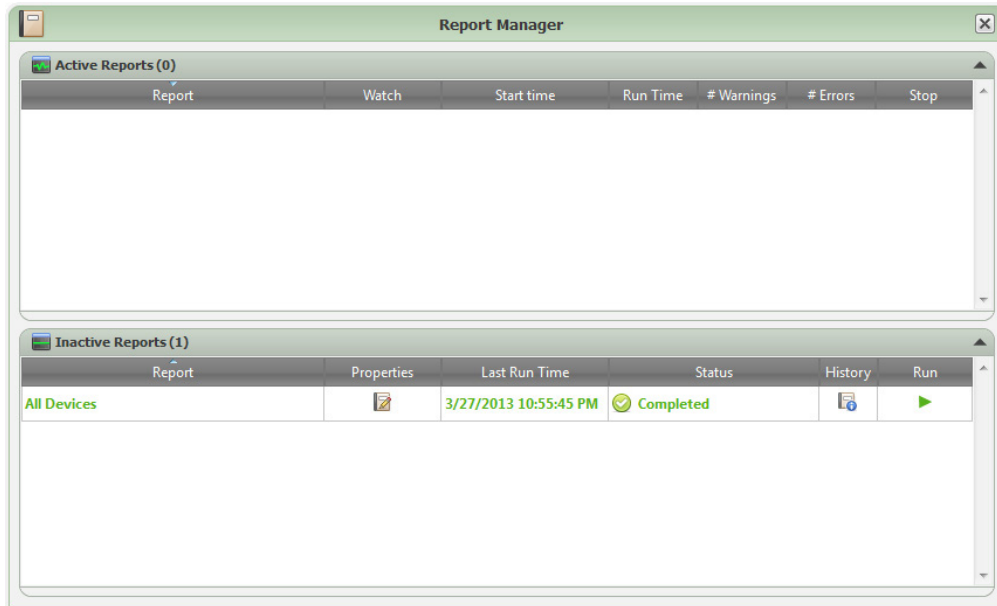


Report Manager

All Reports that have been created for the current database are listed in the *Report Manager* tab.

This tab shows:


- Inactive Reports that are not currently running
- Active Reports that are currently running




Inactive Reports list




Inactive Reports are reports that have been created but are not currently running.

A Inactive Report can be made to start immediately by clicking the  **Run** button, and will be moved to the Active Reports list while it runs.







The properties of a Report can be edited by clicking on the  **Properties** button. This is the same as editing a task from the *Report Library*.

The history of a report can be viewed by clicking the  **Report History** in an inactive report. This is the same as viewing the history from the *Report Library*. The report history shows the results of each time the report has been executed.

For reports that have executed during the current session, the **Status** column will include an icon next to the description indicating the overall result status. The text color of the report row will also be changed and made bold. The icons and colors used are as follows:

-  The report completed or was canceled without warnings or errors. Text will change to green.
-  A lower level warning, such as a control that is not supported by the device. Text will change to brown.
-  At least one error or one high level warning, such as a device connection failure. Text will change to red.

A context menu providing quick access to common report operations can be opened by right-clicking on the report. The context menu provides these actions:

-  **Library** - Opens the Report Library with the report selected.
-  **Properties** - Opens the Report Properties dialog for review or editing.
-  **History** - Opens the Report History Viewer.
-  **Run** - Starts and runs the report.
-  **Clear History** - Permanently deletes all report history information.
-  **Delete** - Deletes the report.

Active Reports list

Active Reports are reports that are currently being run. For *Database Report* types, where all of the information is being queried from the current database, a report may be active for only a fraction of a second while it is processed. *Real-time Reports* may take up to several hours to process depending on the number and type of networked devices that are being queried. Once an *Active Report* has completed being processed, it will be moved to the *Inactive Report* list.

While a report is active, the progress of the task can be viewed in real-time by clicking the  **Watch** button. An *Active Report* can also be manually stopped by clicking the  **Stop** button.

The number of alerts, warnings or errors that occur while a report is running are shown.

Creating Reports



Reports can be created by selecting **New Report...** on the **Reports** menu, or by clicking the  **New Report** toolbar button, or by selecting **New...** from the **Report Library**.

On the **Settings** tab, first give the report a **Name** and **Description** so it can be identified easily in the Reports list.

Next select the type of report to be created.

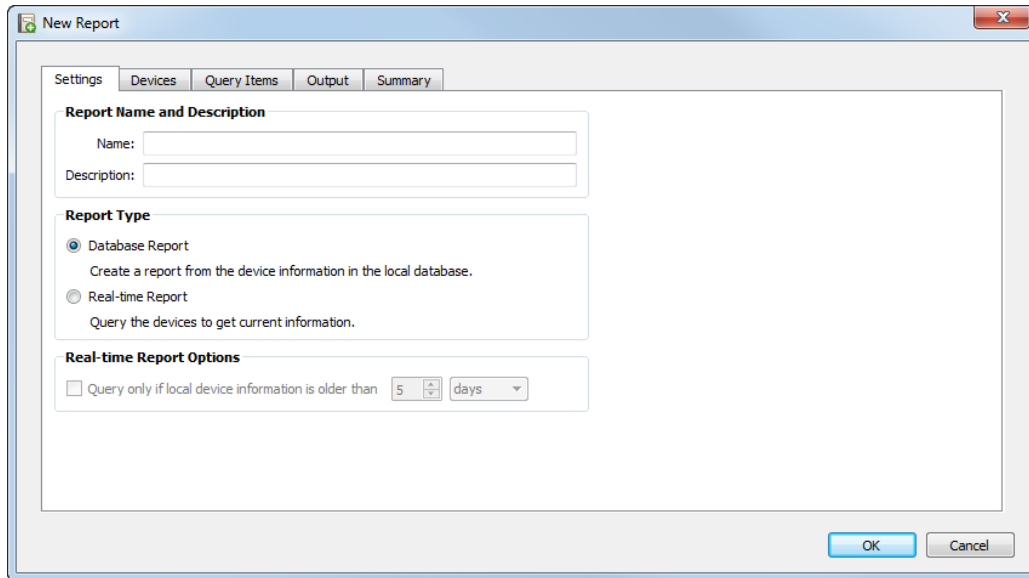
Database Reports: Use the current information for each device stored in the database to create a report. No devices are queried, so this operation is very fast, however the information may not reflect the current condition of each device. The *Time Stamp* column, added to reports by default, lists the date and time when the information for each device was last updated.

Real-time Reports: Queries devices to gather the latest setting values and information. This can be selected to always query the devices, or only query a device if the information in the database has not been updated within a selectable time period. This is useful in order to minimize the number of device queries that are made, while at the same time keeping the device information in the database up to date.

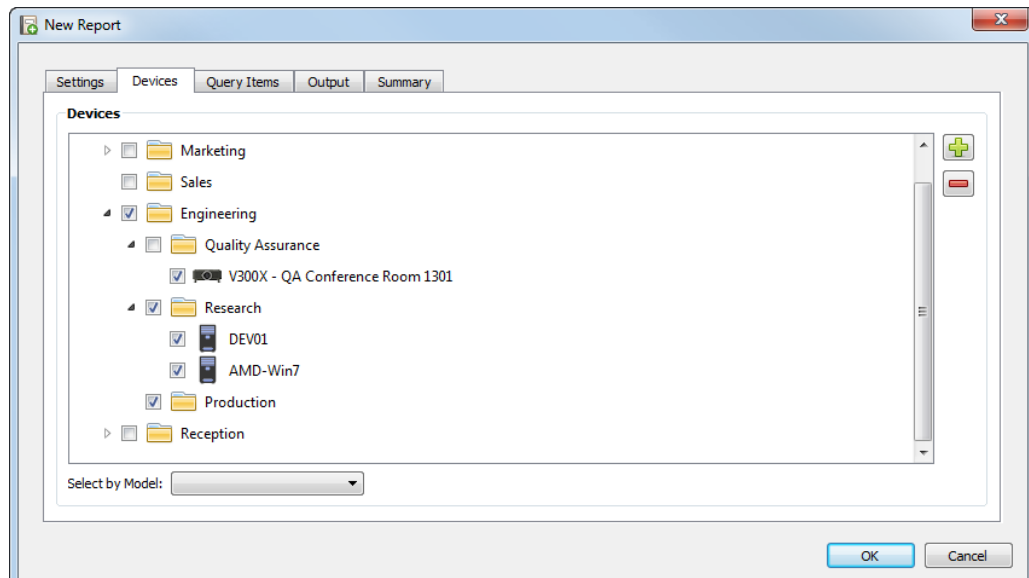
 **Note:** If a device cannot be accessed during a Real-time Report (for example if it is powered off, disconnected, network configuration settings have changed, or is otherwise inaccessible), the icon shown in the device tree will change to show a warning  symbol. In this case, the most recent information from the database for the device will be substituted in the report.

Whenever database data for a device is substituted in a report because the device could not be accessed, a message **“WARNING! Data May Be Out of Date”** will be shown in the report's Status column for the device. The **Time Stamp** column of the report indicates the date and time of each query or database record for the device.

i Info: Whenever a Real-time report is performed on a device, the database information for the device is automatically updated with the equivalent of performing a **Standard Refresh**. As a result any new displays connected to a Windows computer will also be automatically detected and updated.






Next select the **Devices** tab and select the devices to be included in the Report. Selecting a group will automatically select all of the devices within that group.



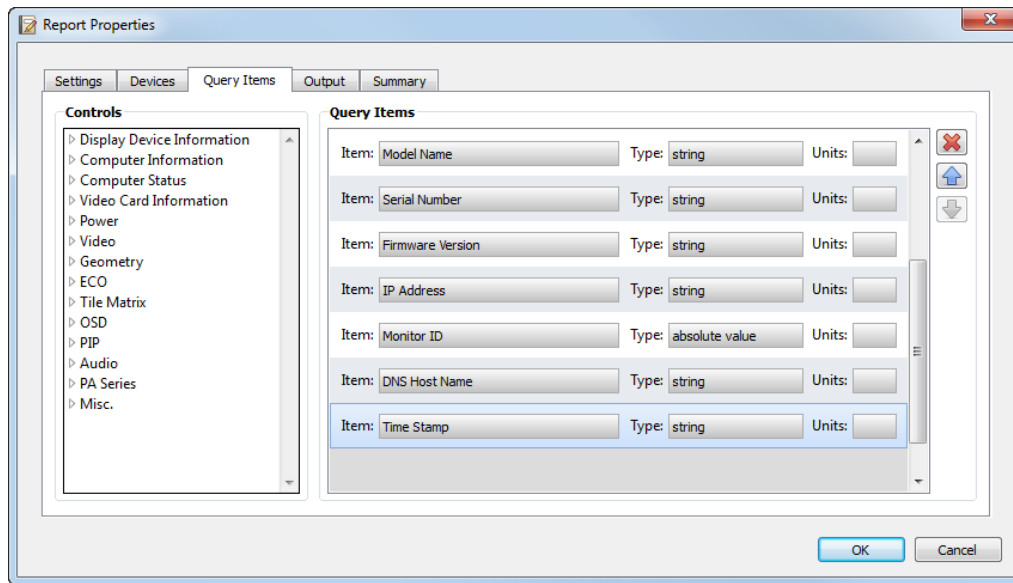
Note: Windows computers and daisy-chained large-screen displays are shown in the device tree in the Devices tab without any child devices (attached displays for Windows computers, and individual daisy-chained large-screen displays for daisy-chain hosts). These child devices will be determined when the Report operation is actually run, and automatically added to the report.


Next select the **Query Items** tab.

The list of controls contains all of the information and settings that can be gathered from the types of devices that have been selected.

The **Query Items** list contains all of the items to be queried for the selected devices. Some query items are automatically included by default as they are necessary to uniquely identify each device in the report. The order of the items in a report can be changed and items can be removed using the , , and  buttons.

Click on a control in the list to add it to the **Query Items** list.



 **Note:** Not all devices will support all of the controls listed.


Next select the **Output** tab

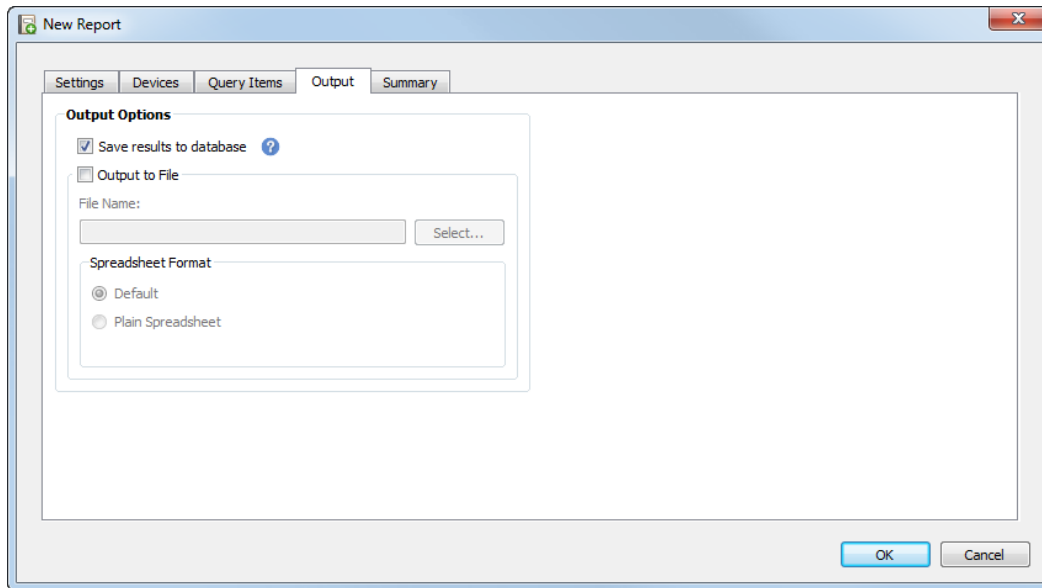
The results of a query can be saved to the database by selecting **Save results to database**. This allows the results of a particular query to be viewed later in the *Report History*. If this option is not selected then the results of the query will only be available in the output format selected.

The results of a query can also be saved to a file in any of the following formats by selecting **Output To File** and clicking **Select...** and selecting an output file name and type:

- Excel spreadsheet in .xls or .xlsx format
- Tab delimited text file
- Comma delimited text file

If an Excel spreadsheet is selected, the formatting of the spreadsheet can be selected to either *Default* or *Plain*. The *Default* formatting applies cell coloring to make data easier to read.

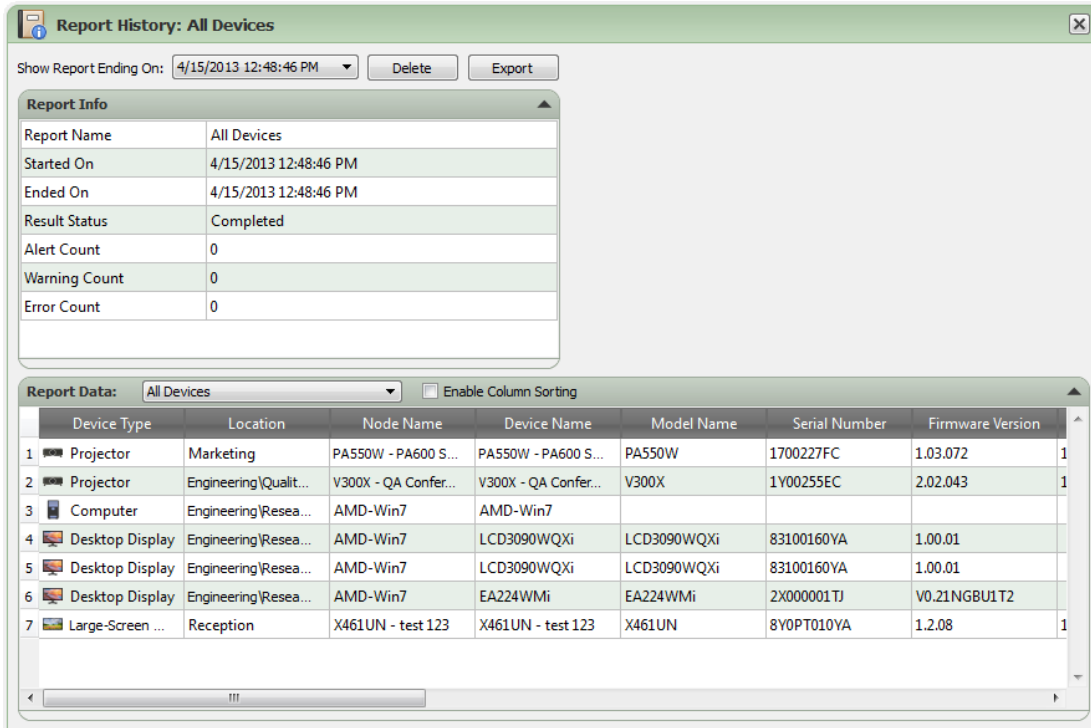
 **Note:** If the Preferences setting **Open report files on completion** is selected, then the default application associated with the selected file type will be used to open the file once the report has completed.



Next click the **Summary** tab to review the settings for the new Report. Click **OK** to add the newly created report to the list of reports. It will appear in the list of *Inactive Reports*.

Report History

The *Report History* window shows the operation history for a particular Report. To view the *Report History*, click the **History** button for a task in the Inactive Reports list, or select the desired report and click **History...** from the *Report Library* dialog.



Device Type	Location	Node Name	Device Name	Model Name	Serial Number	Firmware Version	
1 Projector	Marketing	PA550W - PA600 S...	PA550W - PA600 S...	PA550W	1700227FC	1.03.072	1
2 Projector	Engineering\Qualit...	V300X - QA Confer...	V300X - QA Confer...	V300X	1Y00255EC	2.02.043	1
3 Computer	Engineering\Resea...	AMD-Win7	AMD-Win7				
4 Desktop Display	Engineering\Resea...	AMD-Win7	LCD3090WQXi	LCD3090WQXi	83100160YA	1.00.01	
5 Desktop Display	Engineering\Resea...	AMD-Win7	LCD3090WQXi	LCD3090WQXi	83100160YA	1.00.01	
6 Desktop Display	Engineering\Resea...	AMD-Win7	EA224WMI	EA224WMI	2X000001TJ	V0.21NGBU1T2	
7 Large-Screen ...	Reception	X461UN - test 123	X461UN - test 123	X461UN	8Y0PT010YA	1.2.08	1

The history for each time the report has been run can be selected in the **Show Report Ending On:** list.

The **Report Info** list shows a summary of the report results, including the number of alerts, errors and warnings that were encountered.

The **Report Data** table shows the results for each device in the task. The table data can be filtered by device type by selecting a type from the **Device Type** listbox.

Note:

- Clicking on a row will automatically select the corresponding device in the *Device Tree*.
- Double-clicking a row will open and select the device tab.
- Report History can be sorted by column, by selecting **Enable Column Sorting** and then clicking on the header of the column to sort by. The sorting order can be reversed by clicking on the column header again.

History for the currently selected report run can be exported via the clipboard, Excel or delimited text file by clicking the **Export** button.

History for the currently selected report run can also be deleted by clicking the **Delete** button. History for a Report is retained until it is deleted.

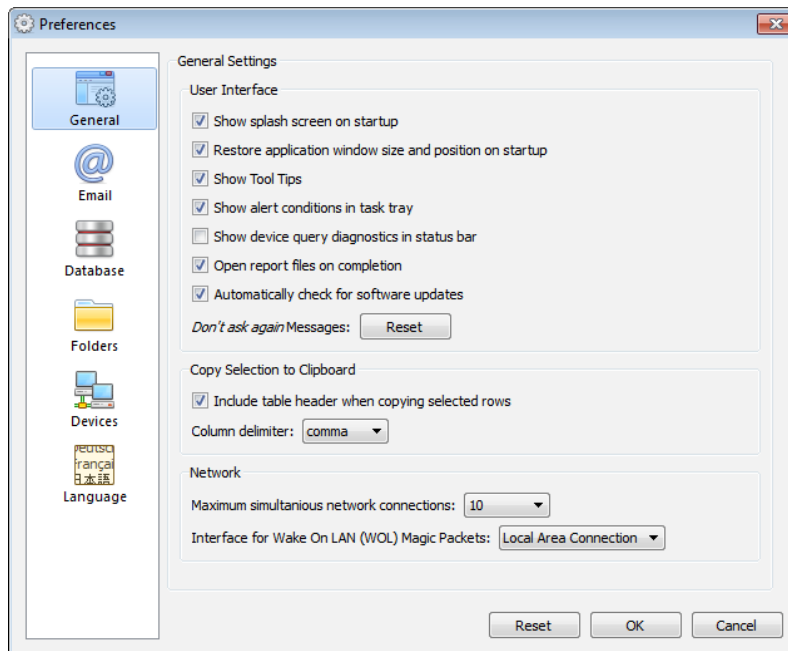
Chapter 9

Preferences

About

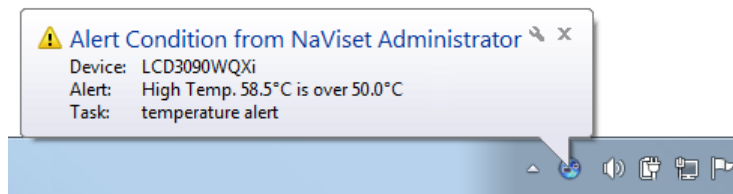
The *Preferences* dialog is used to configure many of the application settings and is accessed from the *Tools* menu. Preference settings are grouped into pages which are selected using the icons on the left of the window. Click **Reset** to restore the default values for all of the setting on the currently selected page.

General Settings



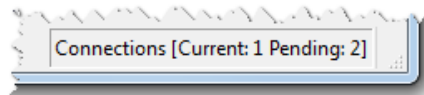
- **Show splash screen on startup** - When selected, a splash screen will be shown briefly when NaViSet Administrator is started.
- **Restore application window size and position on startup** - Saves and restores the application's window size and position.
- **Show Tool Tips** - When selected, Tool Tips for various controls within the application are shown when the cursor is moused over the control.

- **Show alert conditions in task tray** - If an alert condition occurs, a popup message will be shown in the Windows Task Tray.



- **Show device query diagnostics in status bar** - When selected, the status bar in the main window will show a summary of the number of connections to different devices that are currently being processed, and the number of pending connections that are waiting either for an available connection, or for another connection to the same device to be completed. The *Maximum simultaneous network connections* setting sets the limit for the number of connections that can be used at one time.

Note: Only one connection per device is allowed at a time. Therefore if there are two or more separate operations to be performed on a device, only one will be current and the others will be pending until the running job has completed, at which point a pending connection will become current.



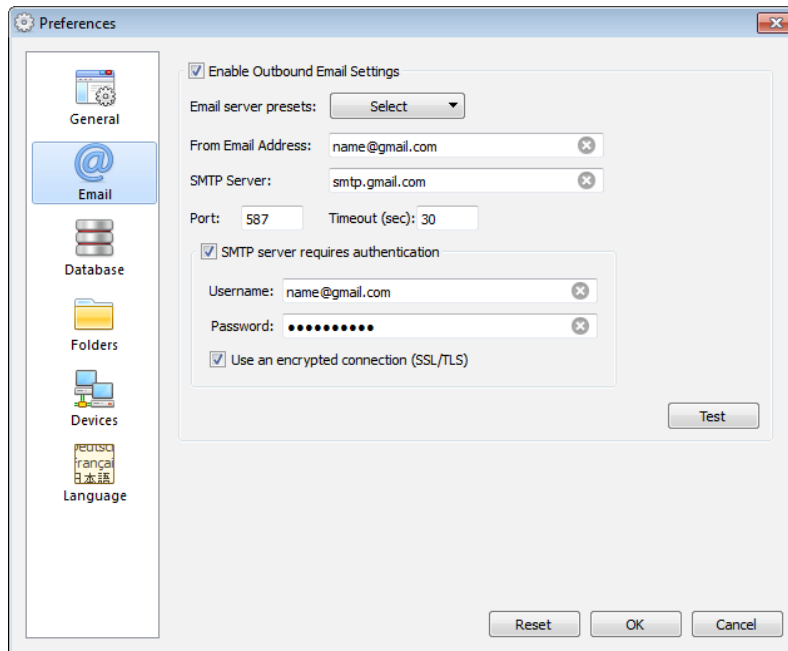
- **Open report files on completion** - When selected, the output file (Excel or delimited text file), or *Report History* window (if no output file is specified) will be automatically opened when a Report operation has completed.
- **Automatically check for software updates** - When selected, the application will periodically automatically check to see if a newer version is available by querying the NEC update servers. An Internet connection is required.
- **Don't ask again messages: Reset** - Restores the displaying of any messages that may not be being shown because *Don't ask again* was selected when they previously appeared.
- **Maximum simultaneous network connections** - Sets the maximum number of network connections that can be made to different devices on the network. NaViSet Administrator can communicate to multiple devices in parallel, which speeds up operation by allowing simultaneous connections, and allows more operations to be performed while waiting for other devices to respond to commands. 5, 10, 20, or 30 connections can be selected, and default value is 10 connections.

Note: In general increasing the number of network connections increases the overall speed at which operations on large numbers of devices can be performed. However there is a point where more connections does not give an increase in speed due to the speed of the computer and other factors.

- **Interface for Wake On Lan (WoL) Magic Packets** - When using *NaViSet Administrator* to remotely wake up a computer using the WoL protocol, UDP packets are broadcast from the network adapter. If the computer running *NaViSet Administrator* has multiple network interfaces, for example wired and wireless, the interface to broadcast the WoL packets from can be selected.

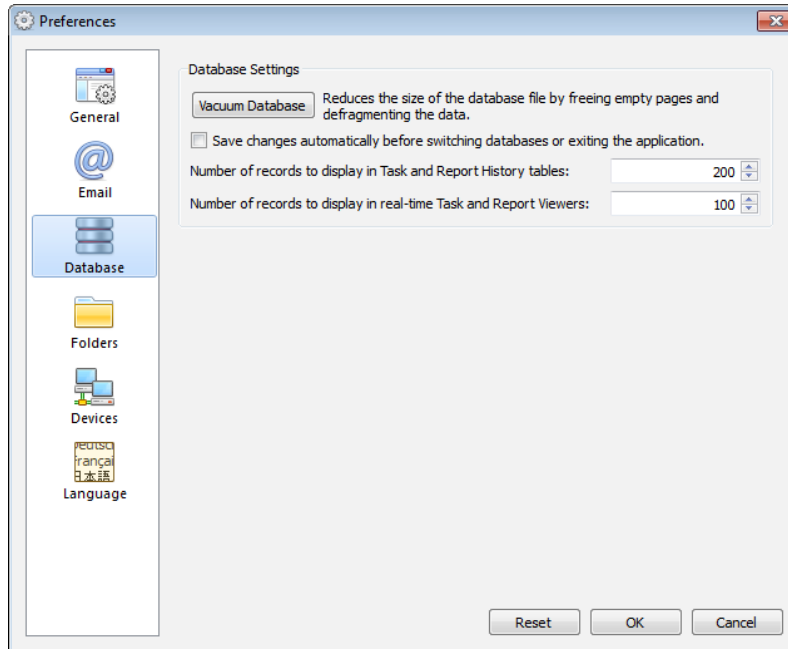
Note: In order for WoL to work correctly, UDP port 9 must not be blocked by any firewalls or routers. See Appendix B on page 139 for details on configuring WoL.

Email Settings



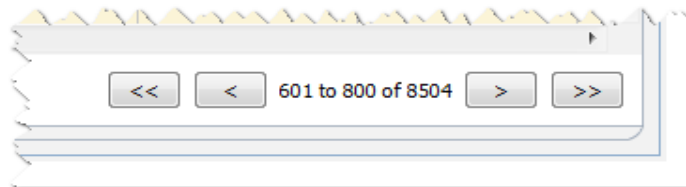
- **Enable Outbound Email Settings** - When selected, *NaViSet Administrator* will enable the sending of notifications via email. Notifications are used in *Tasks* to broadcast conditions such as Alerts, Errors, Warnings and Completion of a particular Task. When not selected, all email notifications are disabled.
- **Email server presets** - This list allows for easy configuration of the email server settings for several popular email services. The SMTP server, port, authentication requirement, and use of SSL/TLS are configured. Other settings such as the *From Email Address*, *username* and *password* must be entered. After selecting one from the list, be sure to Test for correct operation since email service providers may change these parameters without notice.
- **From Email Address** - This is the email address from which messages sent by *NaViSet Administrator* will be sent.
- **SMTP Server** - This is the SMTP (Simple Mail Transfer Protocol) server to be used to send the email.
- **Port:** - This is the port to be used to contact the SMTP server. Note that some Internet Service Providers may block certain ports such as 25 used for sending email. Check with your SMTP server to find out which ports are supported. Typically used ports are 25 and 587.
- **Timeout (sec):** - Specifies the timeout period when trying to send an email via the SMTP server.
- **SMTP server requires authentication** - Select this if the SMTP server requires that authentication credentials be provided in order to send an email.
- **Username:** - The username to be used for authentication with an SMTP server. This may be in the form of an email address depending on the server.
- **Password:** - The password to be used for authentication with an SMTP server.
- **Use an encrypted connection (SSL/TLS)** - Select this if the SMTP server requires that the authentication credentials be encrypted by using SSL/TLS (Secure Sockets Layer / Transport Layer Security) before sending.
- **Test** - Confirms connectivity and credentials with the email server.

Database Settings



- **Vacuum Database** - Click this button to compact the size of the database file by removing unused entries and defragmenting the data.
- **Save changes automatically before switching databases or exiting the application.**
- **Number of records to display in Task and Report History tables** - Sets the maximum number of records, or rows, read from the database and shown at a time. When the number of rows in a Task or Report History exceeds this value, the table switches to paging mode, indicated by the presence of a navigation bar below the table. The default number of records to display is 200.

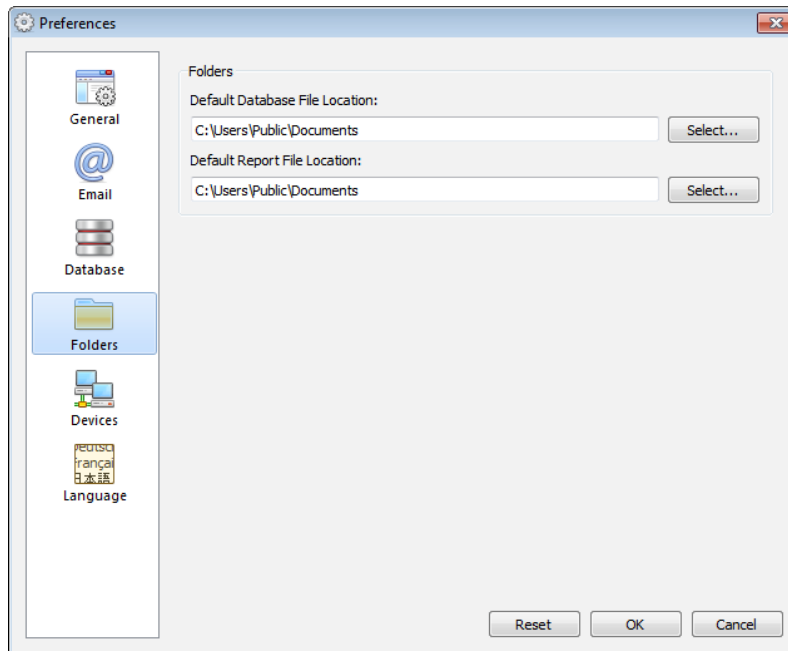
In the example shown below, a Task History table currently has rows 601 through 800 loaded of 8,504 total rows.



Note: Higher numbers of records can result in longer load and unload times for Task Histories, and take additional system resources such as memory and CPU time.

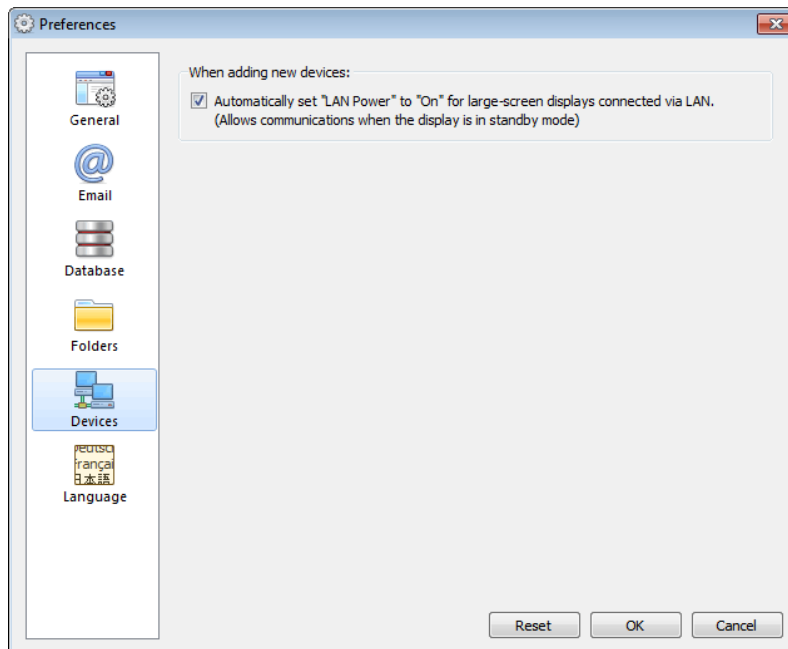
- **Number of records to display in real time Task and Report viewers** - Sets the maximum number of rows to display at a time of a running task or report. The functionality is the same as **Number of records to display in Task and Report History tables**. The default value is 100.

Folders



- **Default Database File Location** - Used to select the location where database files are stored by default.
- **Default Report File Location** - Used to select the location where exported Report output files are saved by default.

Devices

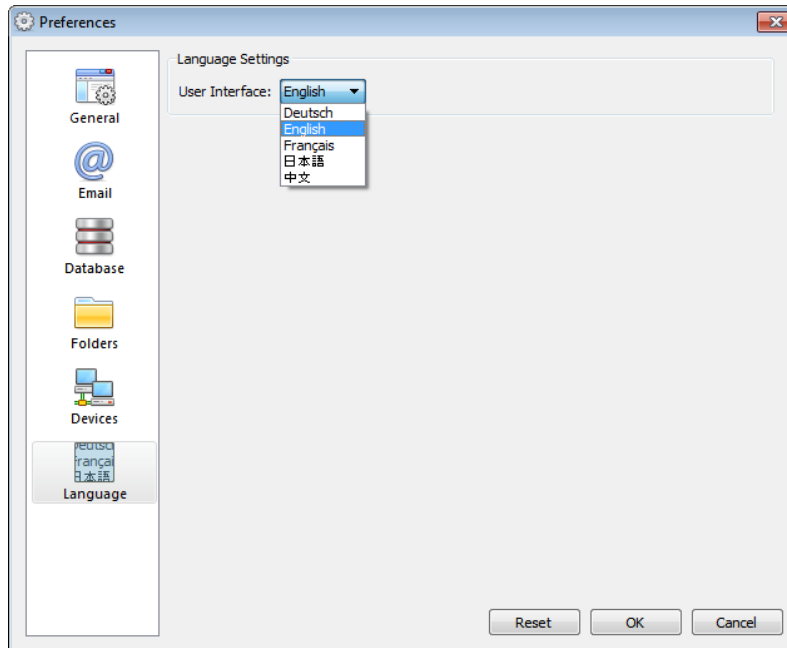


- **Set LAN Power to "On" for LAN connected devices** - Check this option to automatically set the **LAN Power** setting of NEC Large-screen displays to **On** as they are added to the database. This will allow communications with the display while in standby mode.
- **Maximum number of retries** - Select the number of times running tasks and reports should attempt to connect to devices.

- **Timeout between retries** - Enter the number of seconds to wait between each retry.

Note: The Maximum Number of Retries and the Timeout Between Retries can be overridden for each task and report. See "Devices Tab" on page 82 for more information.

Language



- **Language Settings: User Interface** - Selects the language NaViSet Administrator uses for the User Interface.


Note: After a new language is selected, NaViSet Administrator must be restarted so that the new language can be loaded. The option to restart will be given when the Preferences dialog is dismissed.

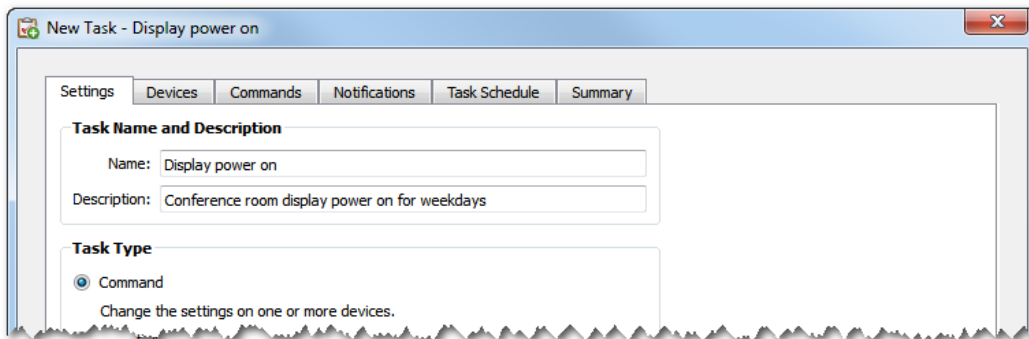
Chapter 10 Usage examples

This chapter gives some step-by-step examples for configuring and running typical Tasks and Reports.

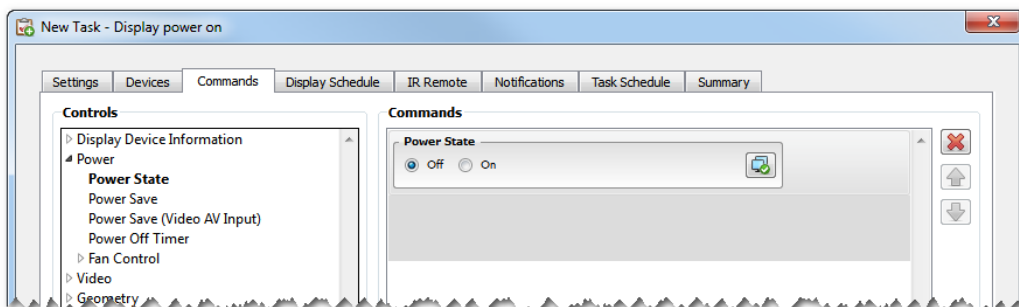
Example Task: Turn displays on and off at set times every weekday

In this example, displays will be configured to turn on and off at set times using two tasks; One to turn display power on, and another to turn display power off. First a task to turn the display power on at certain times and days will be created, then duplicated, and then modified to turn off instead of on, and with the power off times.

1. Create a new Task by clicking the New Task  toolbar button, or selecting **New Task...** from the **Tasks** menu.
2. Enter a **Name** and **Description** for the task to indicate the purpose of the task - in this case powering on displays.

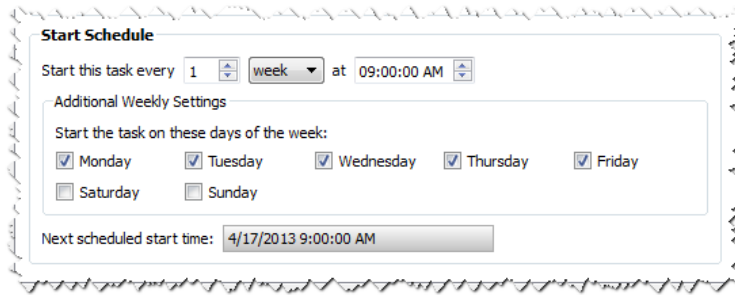


3. Select the Task Type: **Command**
4. On the **Devices** tab, select the devices to be controlled.
5. On the **Commands** tab, open the **Power** section on the **Controls** list, and select **Power State** to add it to the list of commands.

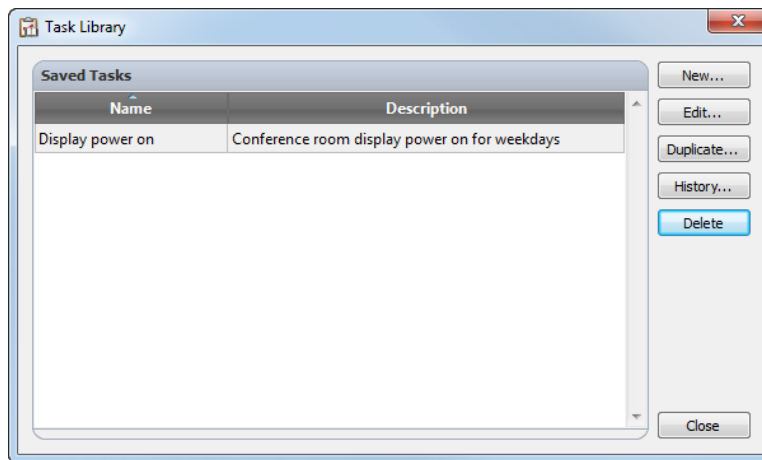


6. In the list of commands, select the Power State: **On**.
7. On the **Task Schedule** tab, select Start Options: **Scheduled**.

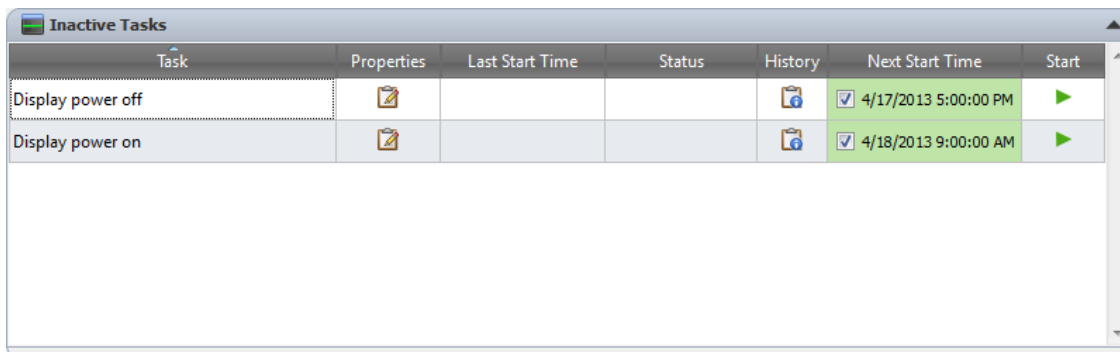
- In the **Start Schedule** section, select the desired time and days on which to turn the displays on.



- On the **Summary** tab review the Task settings, and click **OK**.
- Next to easily configure the power off times, open the **Task Library**, select the task that was just created and click **Duplicate...**




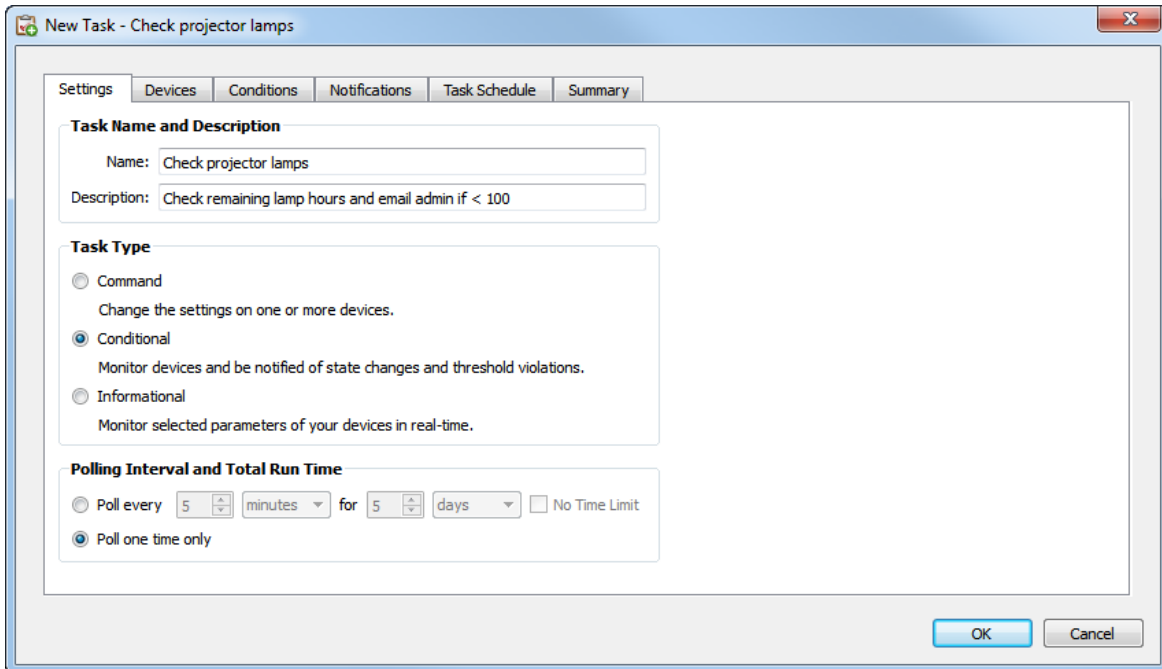
- On the **Settings** tab edit the Task **Name** to indicate that this duplicated task is for power off.
- On the **Commands** tab change the **Power State** command selection from On to **Off**.
- On the **Task Schedule** tab select the desired Off time for the displays.
- On the **Summary** tab review the Task settings, and click **OK**.
- There will now be two new tasks listed in the **Inactive Tasks** list that will automatically run on the selected days and times. The green background in the **Next Start Time** column indicates the tasks will run automatically at the time indicated.



Example Task: Check for projector lamps close to needing replacement

In this example, a task to check to see if the estimated lamp life remaining for projectors is below a specified number of hours limit is created. This is recommended in order to perform proactive ordering of replacement lamps and maintenance. The task will be set to run once every week, and an email will be sent to the administrator if any projector's estimated lamp life remaining is less than 100 hours.

1. Create a new Task by clicking the New Task  toolbar button, or selecting **New Task...** from the **Tasks** menu.
2. Enter a **Name** and **Description** for the task to indicate the purpose of the task.



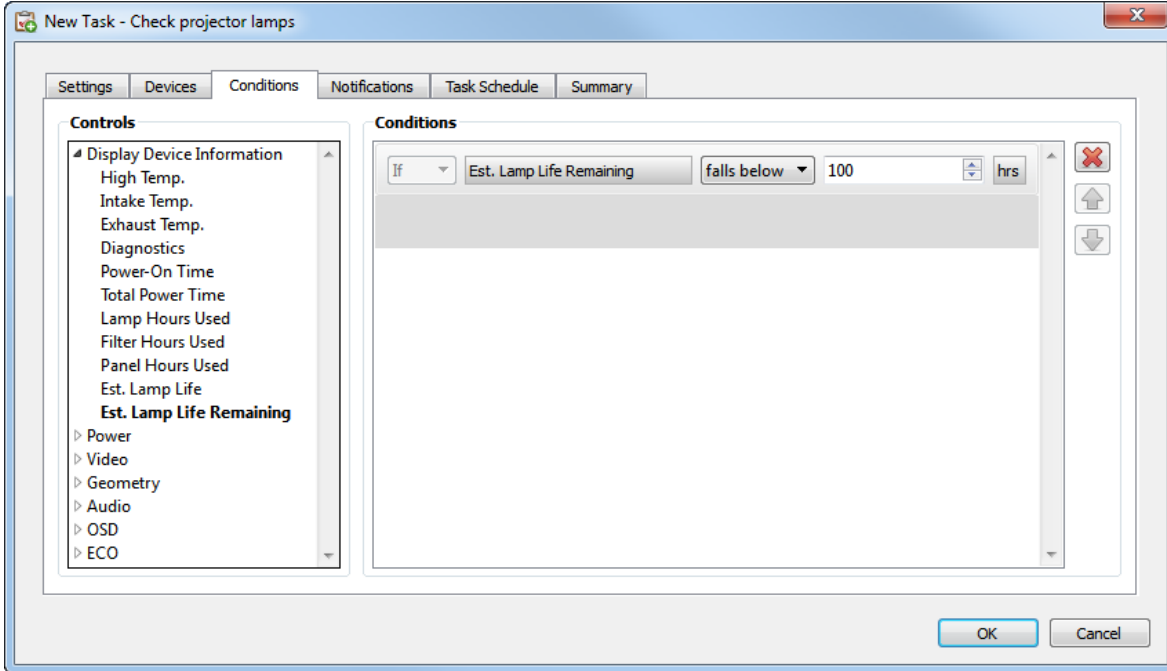
The screenshot shows a dialog box titled "New Task - Check projector lamps". It has several tabs: "Settings", "Devices", "Conditions", "Notifications", "Task Schedule", and "Summary". The "Settings" tab is selected. The dialog is divided into three main sections:

- Task Name and Description:**
 - Name: Check projector lamps
 - Description: Check remaining lamp hours and email admin if < 100
- Task Type:**
 - Command: Change the settings on one or more devices.
 - Conditional: Monitor devices and be notified of state changes and threshold violations.
 - Informational: Monitor selected parameters of your devices in real-time.
- Polling Interval and Total Run Time:**
 - Poll every 5 minutes for 5 days (with "No Time Limit" checkbox).
 - Poll one time only

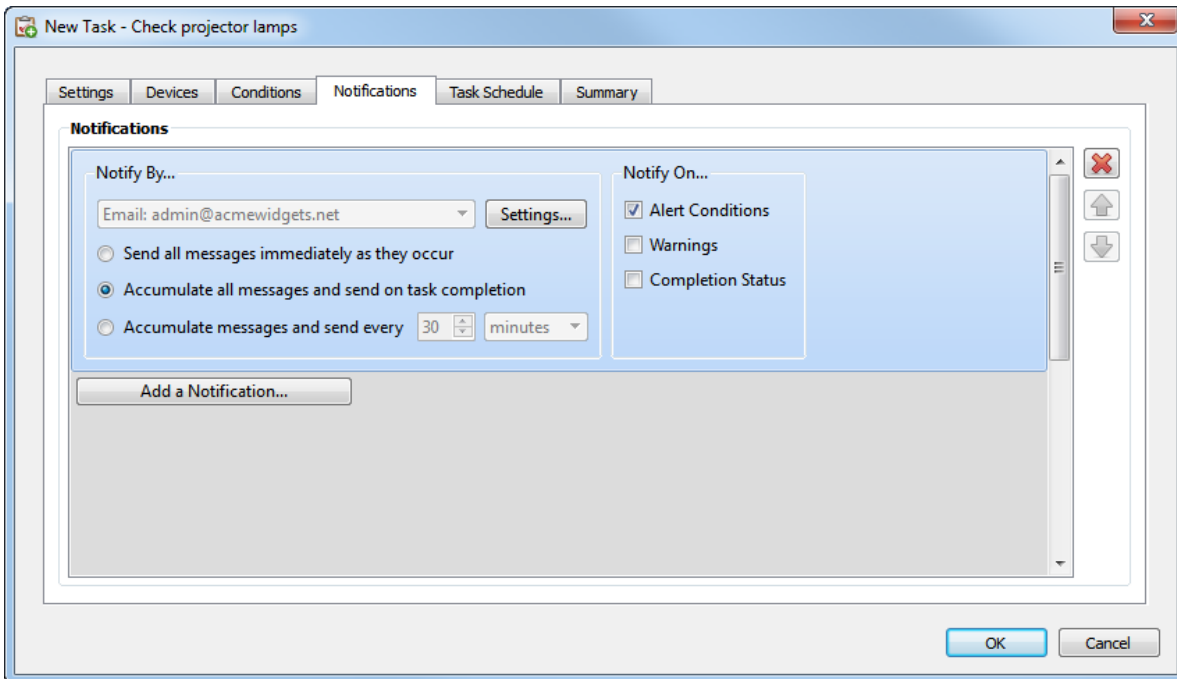
At the bottom right, there are "OK" and "Cancel" buttons.

3. Since the task will check the condition of a value, select the **Task Type: Conditional**.
4. Since it is only necessary to check each projector once each time the task is run, select **Polling Interval and Total Run Time: Poll one time only**.
5. On the **Devices** tab, select the projectors to be checked.
6. On the **Conditions** tab, open the **Display Device Information** section on the **Controls** list, and select **Est. Lamp Life Remaining** to add it to the list of conditions.

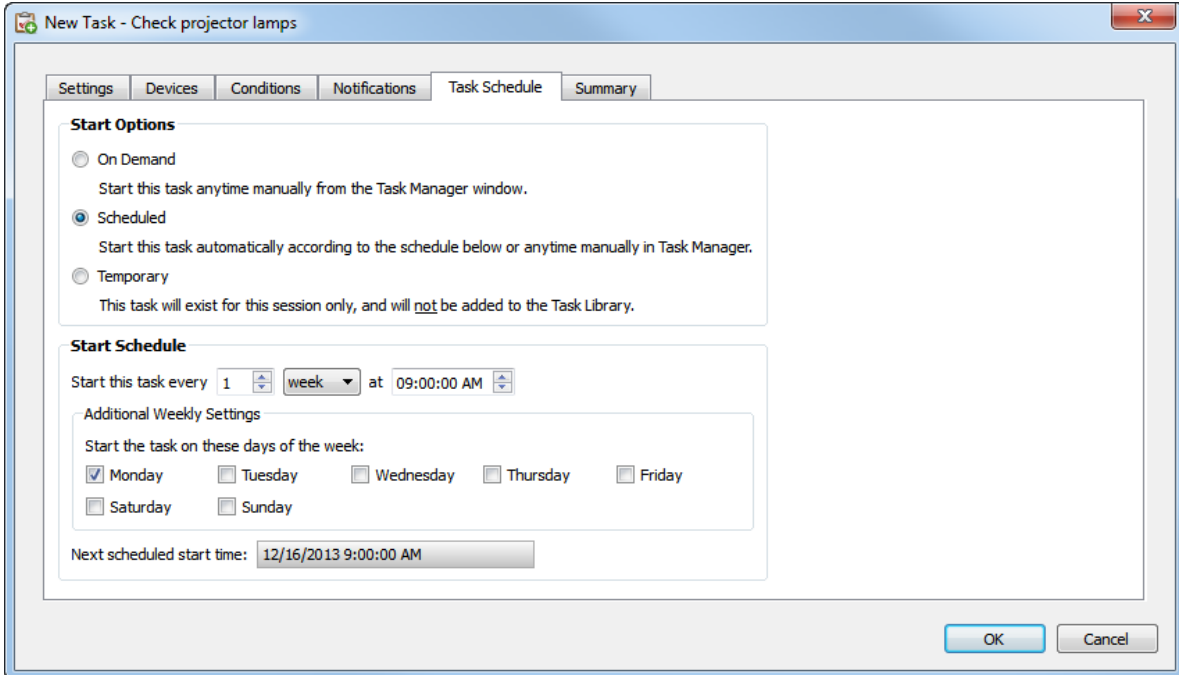
7. Change the condition to **falls below** and enter 100 as the **hrs** value.



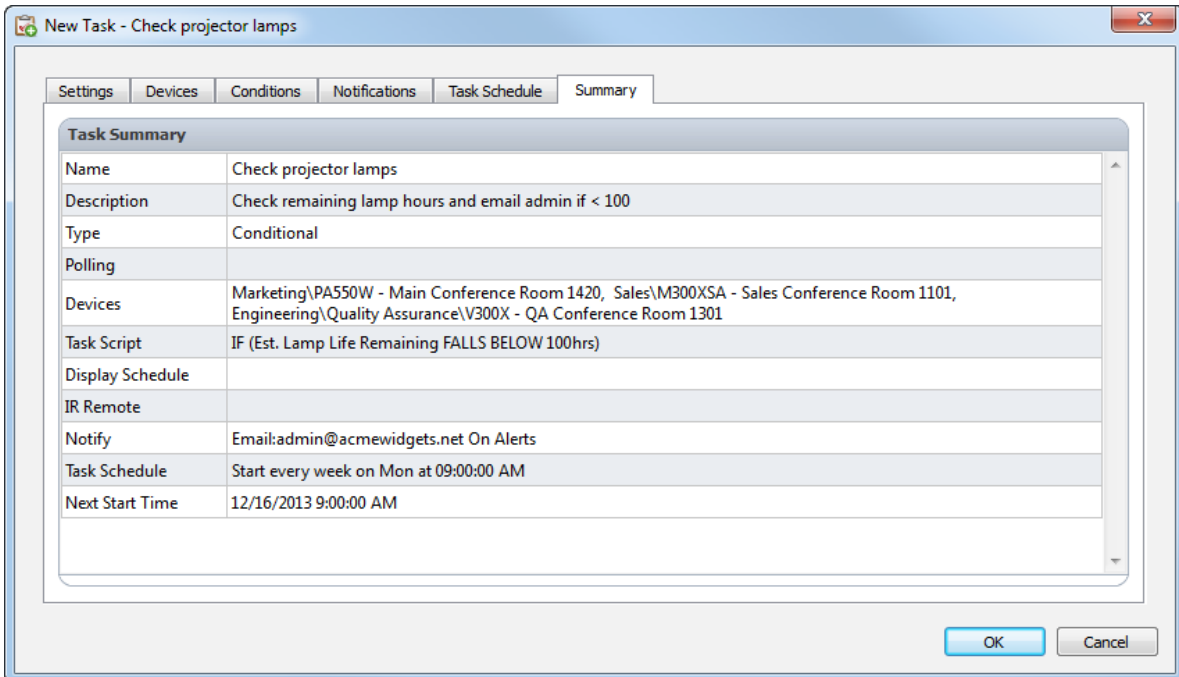
8. On the **Notifications** tab, click **Add a Notification...**, enter the recipients email address and click **OK**.
9. Since the administrator doesn't need to know immediately for each individual projector if the condition is true, select **Accumulate all messages and send on task completion**. This way only one email will be sent listing any projectors for which the lamp lifetime condition is true.



10. On the **Task Schedule** tab select *Start Options: Scheduled*, and select the frequency at which the task will be performed. In this example the task will run once a week on a Monday at 9 AM.




11. On the **Summary** tab review the Task settings, and click **OK**.

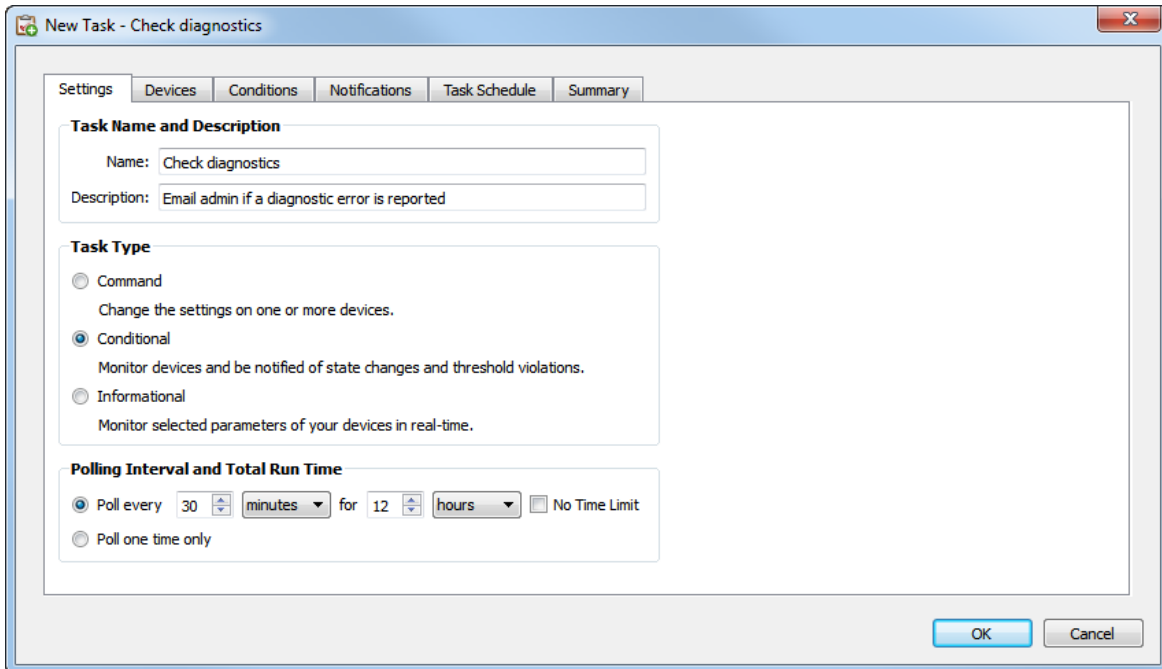


12. There will now be a new task listed in the **Inactive Tasks** list that will automatically run on the selected day and times. The green background in the **Next Start Time** column indicates the task will run automatically at the time indicated.

Example Task: Check for displays reporting a diagnostic error condition

In this example, a task to check to see if a display device is reporting a diagnostic error condition is created. If a diagnostic error is returned from a device, an alert email will be sent to the administrator. The task will be set to check each device every 30 minutes during weekdays between 8 AM and 8 PM. Most NEC display devices can report diagnostic error conditions such as overheating, fan failures, lamp failures, etc. (if applicable).

1. Create a new Task by clicking the New Task  toolbar button, or selecting **New Task...** from the **Tasks** menu.
2. Enter a **Name** and **Description** for the task to indicate the purpose of the task.



New Task - Check diagnostics

Settings | Devices | Conditions | Notifications | Task Schedule | Summary

Task Name and Description

Name: Check diagnostics

Description: Email admin if a diagnostic error is reported

Task Type

Command
Change the settings on one or more devices.

Conditional
Monitor devices and be notified of state changes and threshold violations.

Informational
Monitor selected parameters of your devices in real-time.

Polling Interval and Total Run Time

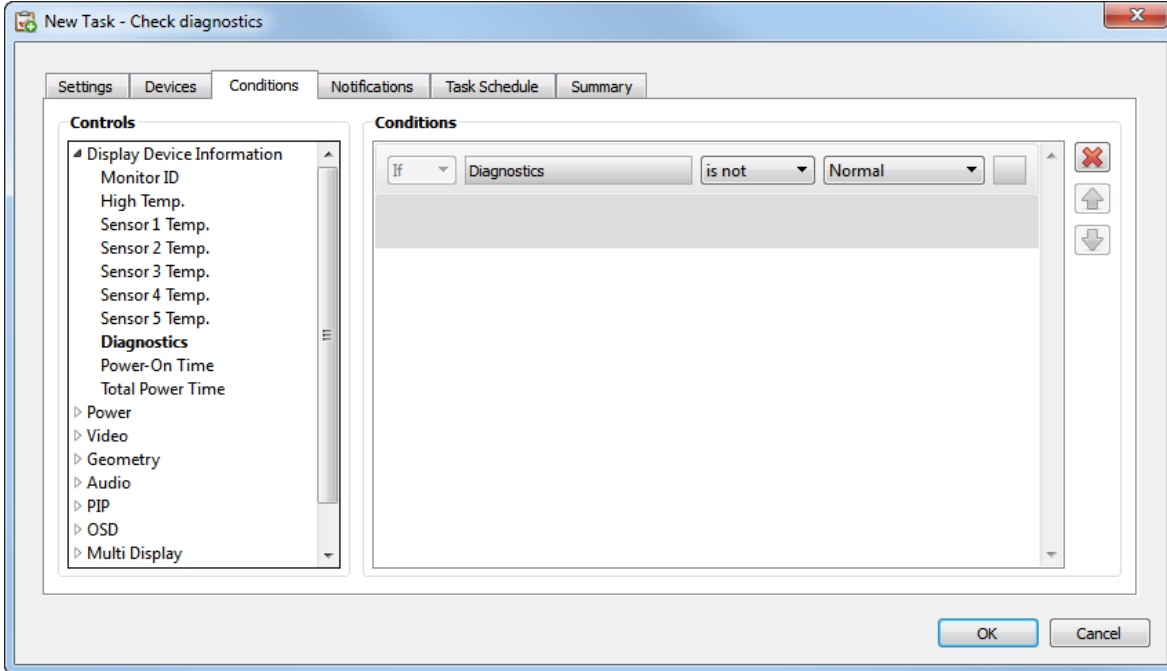
Poll every 30 minutes for 12 hours No Time Limit

Poll one time only

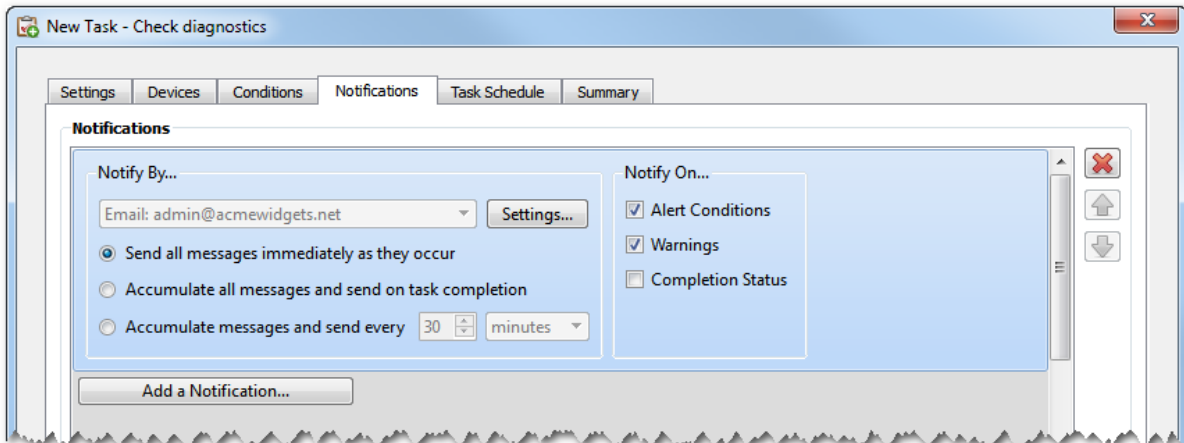
OK Cancel

3. Since the task will check the condition of a value, select the **Task Type: Conditional**.
4. The task will check each device every 30 minutes, so set the **Poll Every** interval to 30 minutes. It will run from 8 AM to 8 PM, so set the run time to 12 hours.
5. On the **Devices** tab, select the devices to be checked.
6. On the **Conditions** tab, open the **Display Device Information** section on the **Controls** list, and select **Diagnostics** to add it to the list of conditions.

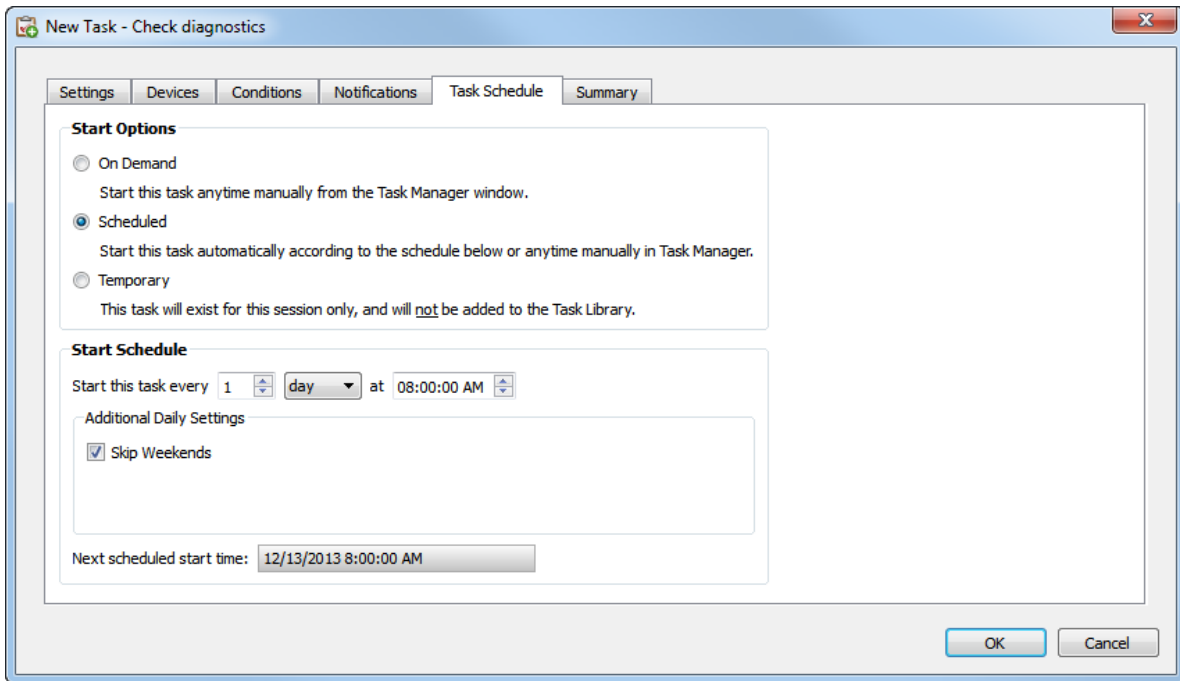
- Change the condition to **is not** and **Normal** as the value.



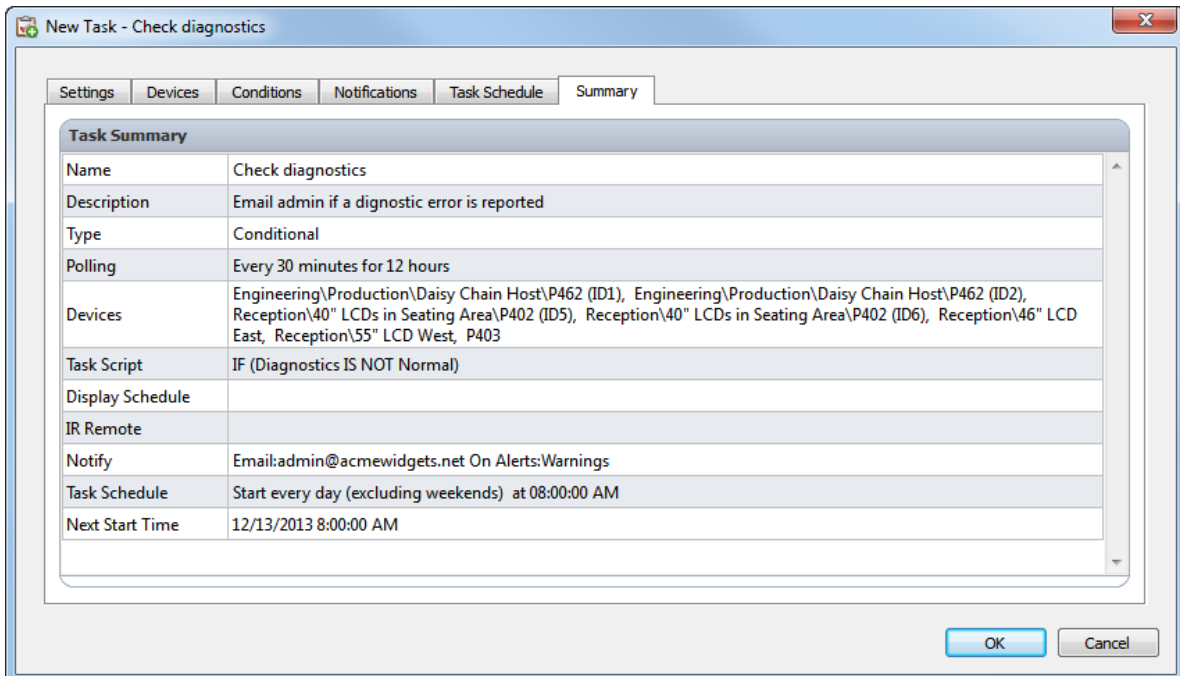
- On the **Notifications** tab, click **Add a Notification...**, enter the recipients email address and click **OK**.
- Since the administrator will want to know immediately for each device if the condition is true, select **Send all messages immediately as they occur**. Since the administrator will want to be notified if a device is unable to be reached over the LAN, select **Warnings** in the **Notify On...** section, as well as **Alert Conditions**. A warning will be generated if a device can't be reached for some reason.



10. On the **Task Schedule** tab select *Start Options: Scheduled*, and select the frequency at which the task will be performed. In this example the task will on weekdays starting at 8 AM and weekends will be skipped.



11. On the **Summary** tab review the Task settings, and click **OK**.




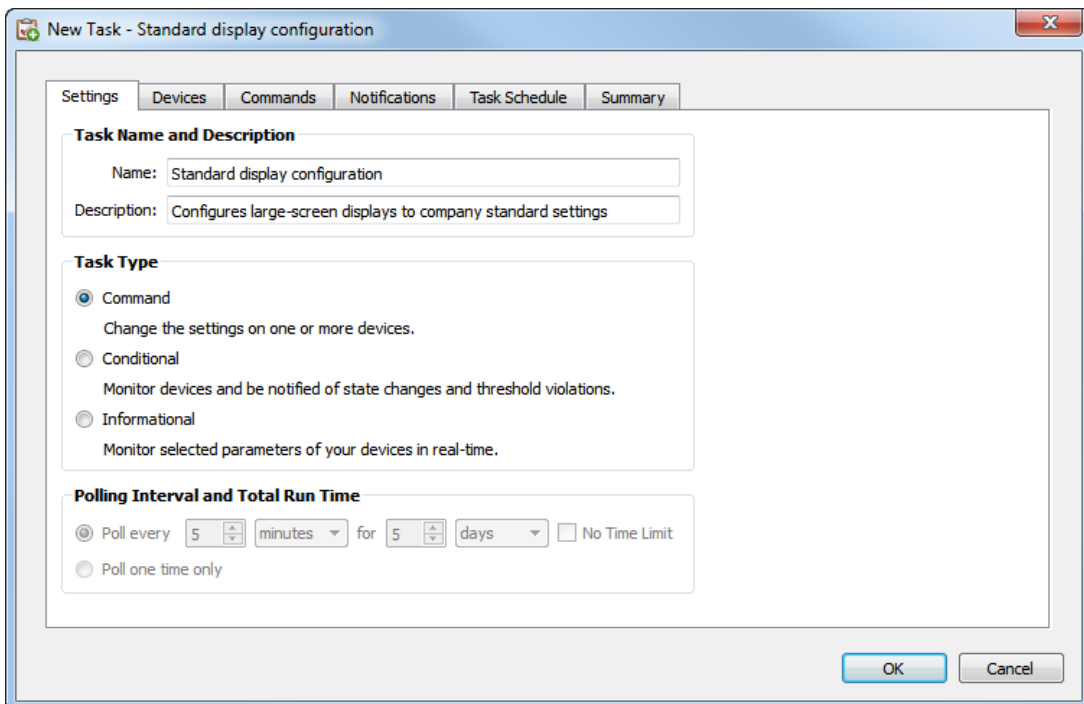
12. There will now be a new task listed in the **Inactive Tasks** list that will automatically run on the selected days and times. The green background in the **Next Start Time** column indicates the task will run automatically at the time indicated.

Example Task: Configure new displays with multiple preset settings

In this example a task is created with a list of settings to be applied to displays. This could be a standard configuration that is needed for all new displays in a particular application or environment. Having these changes performed by a task means that the process can be automated, thus reducing the time taken and risk of error due to mis-adjustment.

Once a task has been created with the desired settings, it can be run on demand and applied to new displays by modifying the devices selected in the task.

1. Create a new Task by clicking the New Task  toolbar button, or selecting **New Task...** from the **Tasks** menu.
2. Enter a **Name** and **Description** for the task to indicate the purpose of the task.



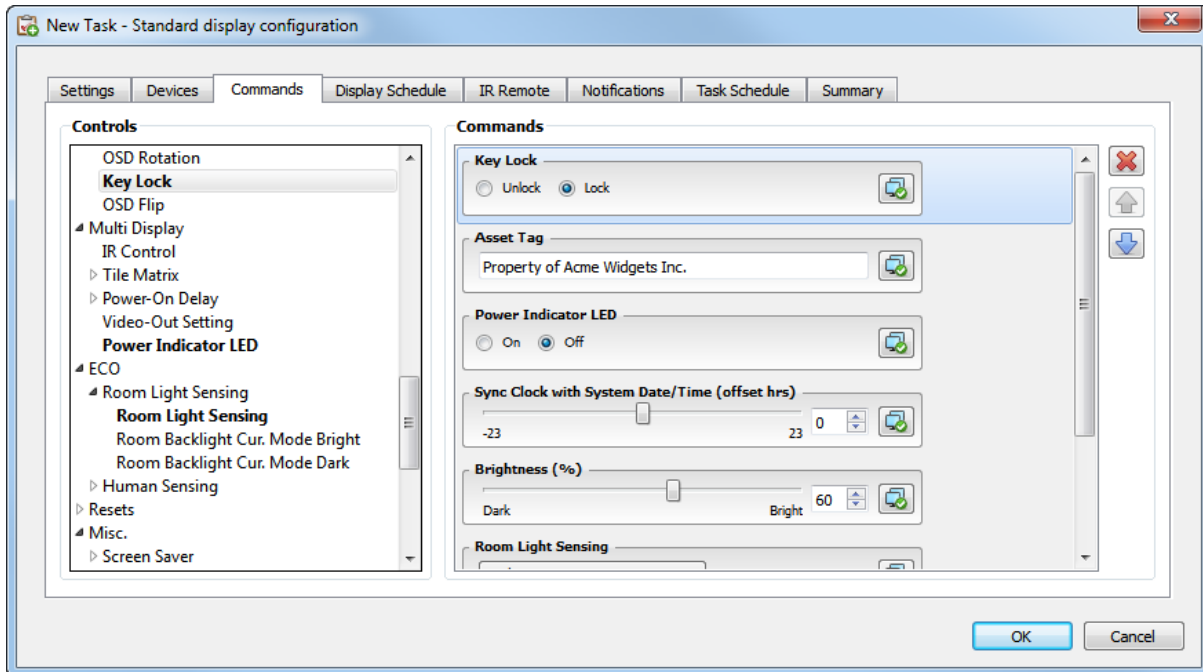
The screenshot shows a dialog box titled "New Task - Standard display configuration". It has several tabs: "Settings", "Devices", "Commands", "Notifications", "Task Schedule", and "Summary". The "Settings" tab is selected. Inside the dialog, there are three main sections:

- Task Name and Description:** The "Name" field contains "Standard display configuration" and the "Description" field contains "Configures large-screen displays to company standard settings".
- Task Type:** There are three radio button options:
 - Command**: Change the settings on one or more devices.
 - Conditional**: Monitor devices and be notified of state changes and threshold violations.
 - Informational**: Monitor selected parameters of your devices in real-time.
- Polling Interval and Total Run Time:**
 - Poll every 5 minutes for 5 days. There are spinners for the numbers 5 and 5, and dropdown menus for "minutes" and "days".
 - Poll one time only.
 - No Time Limit.

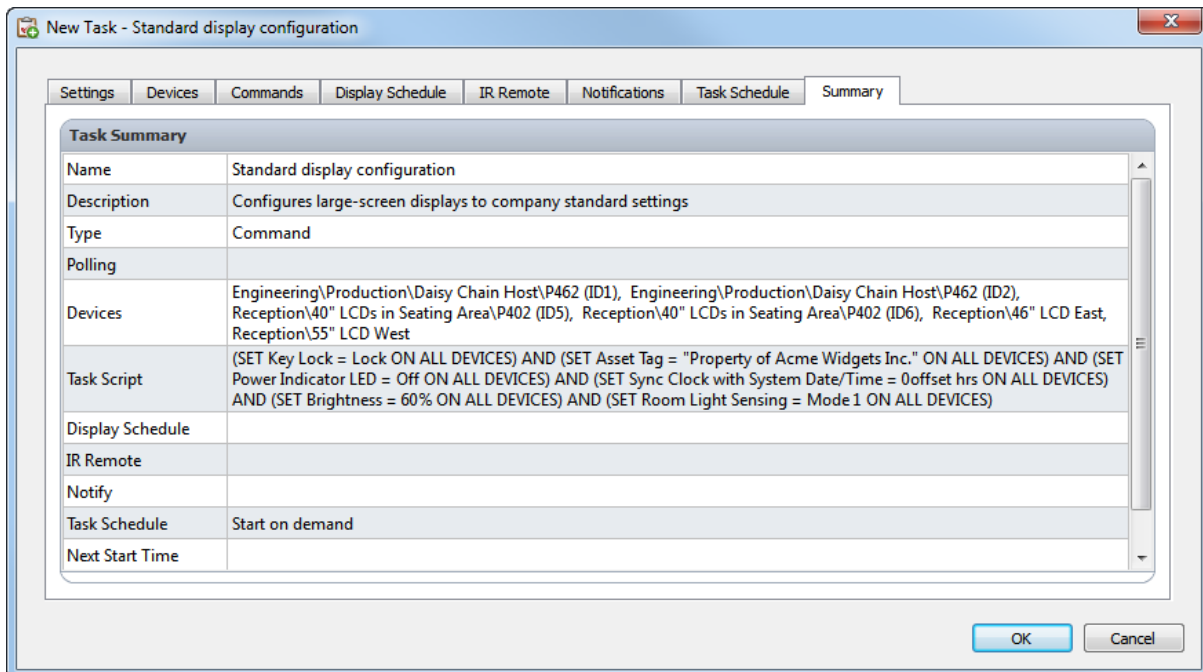
At the bottom right of the dialog are "OK" and "Cancel" buttons.

3. Since the task will change the settings on displays, select **Task Type: Command**.
4. On the **Devices** tab, select at least one already existing device of the same type. This way the Commands list will be populated with the correct controls for the device type.

- On the **Commands** tab, select and configure the values for each of the settings to be applied for the display configuration.



- On the **Task Schedule** tab, select **On Demand** since the task will be run manually on new displays.
- On the **Summary** tab review the Task settings, and click **OK**.




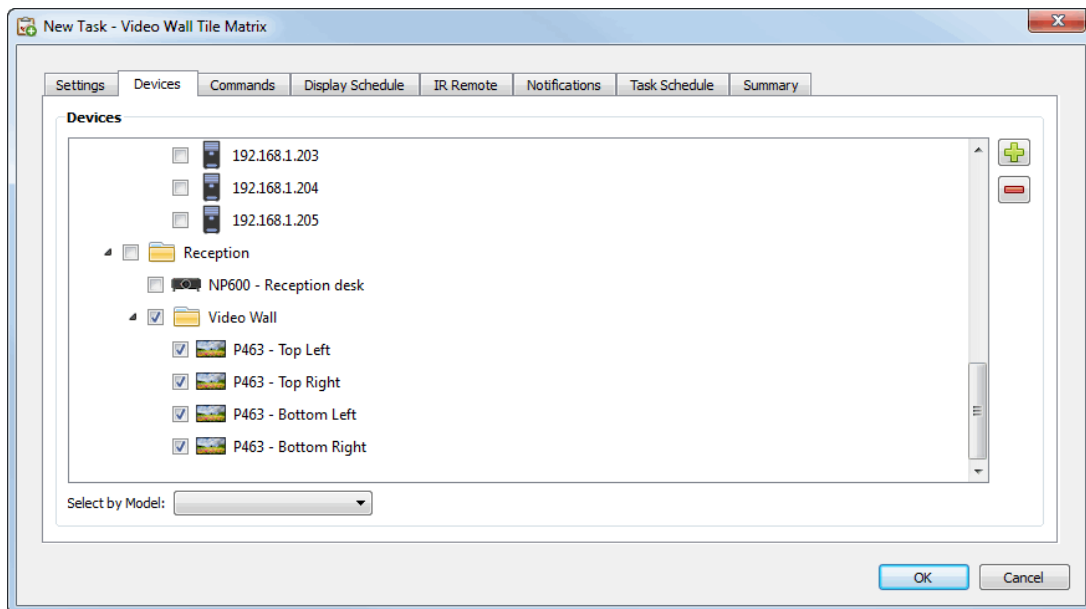
- There will now be a new task listed in the **Inactive Tasks** list that must be run manually.
- To run the task on new displays, first add them to the device tree, then modify the task by clicking the **Properties** icon. On the **Devices** tab, modify the selection to include the new displays to configure. Click **OK** and then run the task by clicking the **Run** button.

Example Task: Using Device Specific controls to configure a Tile Matrix

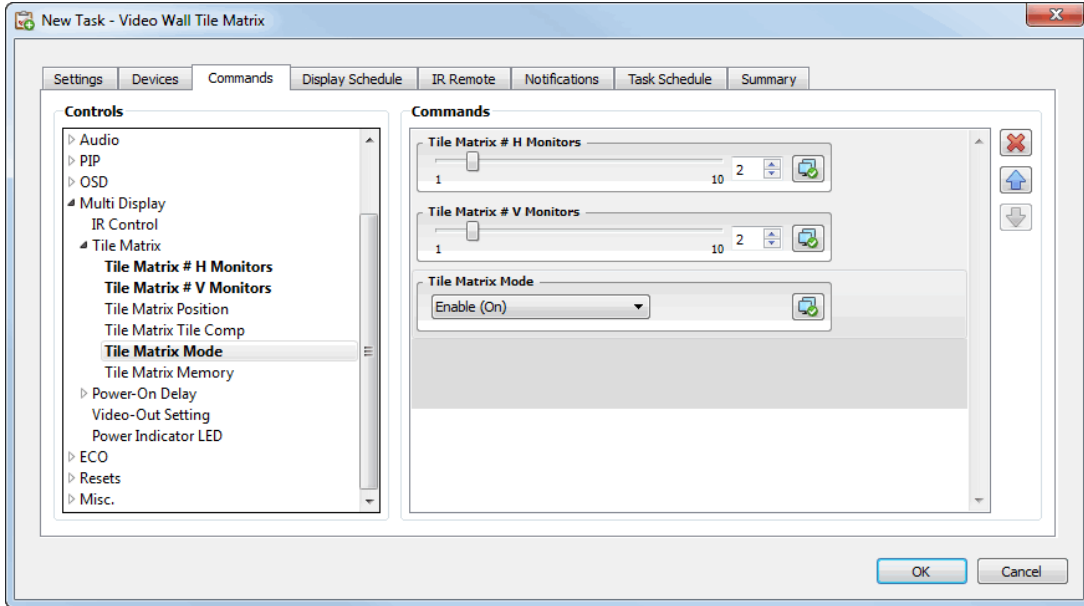
In this example a task is created to configure the Tile Matrix settings on 4 displays arranged in a 2x2 video wall. This task will allow all the displays in the video wall to be reconfigured using a single task. This is useful if for example if a video wall is used in multiple configurations of Tile Matrix, and needs to be quickly reconfigured.

Some of the commands, such as enabling the Tile Matrix, are applied to all of the displays with the same settings. However for setting position of each displays within the Tile Matrix, individual settings per display are required. This can be accomplished using the Device Selector controls.

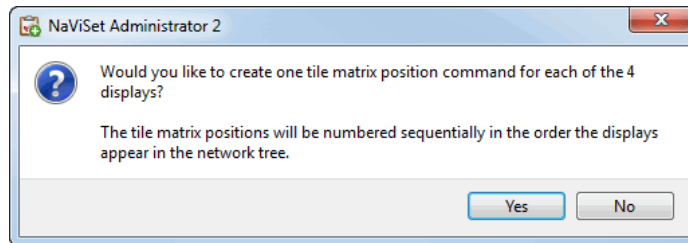
1. Create a new Task by clicking the New Task  toolbar button, or selecting **New Task...** from the **Tasks** menu.
2. Enter a **Name** and **Description** for the task to indicate the purpose of the task.
3. Since the task will change the settings on displays, select **Task Type: Command**.
4. On the **Devices** tab, select the 4 displays in the video wall.



5. On the **Commands** tab, select and add the controls to configure the H and V size of the Tile Matrix, as well as enabling the Tile Matrix. These controls will be applied with the same setting values for all of the displays. In this example the **Tile Matrix # H Monitors** and **Tile Matrix # V Monitors** are set to 2 since the video wall is arranged as a 2x2.

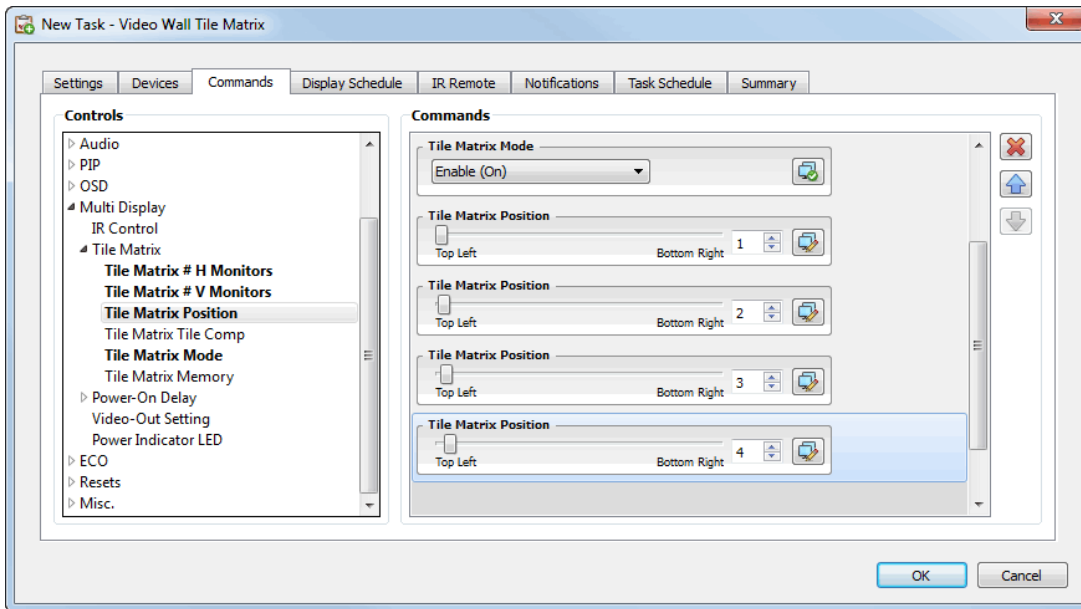



6. Next, the positions of each display within the Tile Matrix need to be set using the **Tile Matrix Position** control. The value of this control setting needs to be different for each display in the Task. Select and add the setting and the following dialog will appear. Selecting **Yes** will automatically add one instance of the Tile Matrix Position control for each display, and sequentially assign the position setting value.

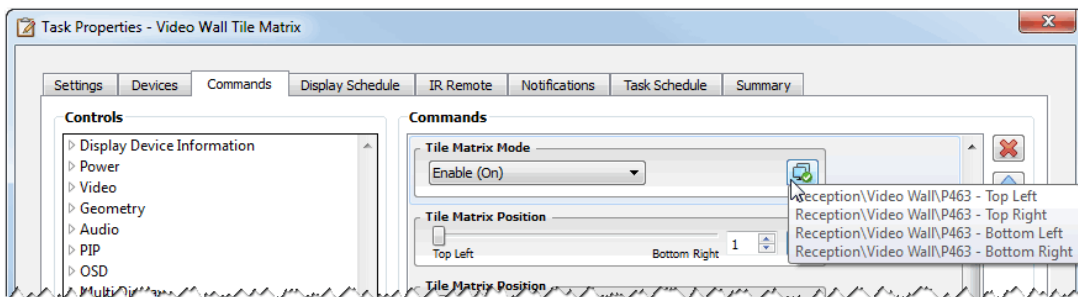



Note: *Tile Matrix Positions are ordered left to right, top to bottom. So in this example the top left display has position 1, the top right - position 2, bottom left - position 3, and bottom right - position 4. Ordering the displays in the device tree in this way allows the Tile Matrix Positions to be assigned automatically without the need to manually set them for each display.*

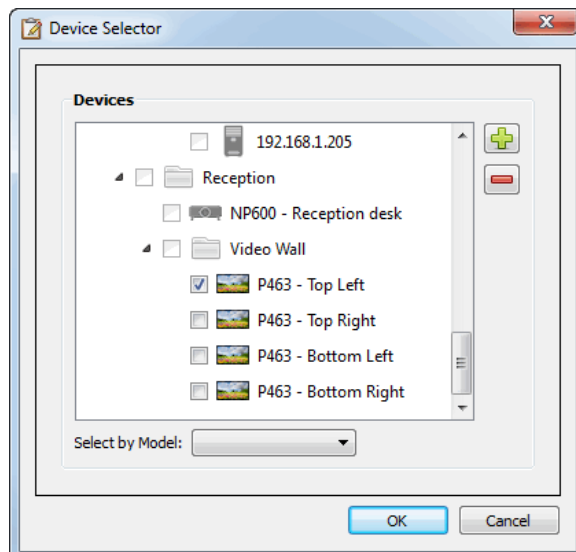
7. The Tile Matrix Position controls will show up in the command list as shown below.



8. The devices that a particular control will be applied to can be seen by mousing over the  button as shown below.




9. If necessary, the devices that a control applies to can be modified by clicking on the  button, which will open the **Device Selector** dialog. Select the devices that the control is to be applied to.



10. Complete the task configuration and review the Task settings on the **Summary** tab.


11. Click **OK** to add the new task listed in the **Inactive Tasks** list.
12. Duplicate and modify the task as necessary to create other Tile Matrix configurations, such as Tile Matrix Off etc.

 **Note:** *Depending on the changes being made to the Tile Matrix configuration of the displays, it may not be necessary for some of the commands to be performed with each task. For example if the displays are being switched between a 2x2 tile matrix, and individual displays (no tile matrix), then it is not necessary for example to send the Tile Matrix # H Monitors, Tile Matrix # V Monitors, and Tile Matrix Position settings for each task. In this particular case, once the displays have been initially configured, only the Tile Matrix Mode - Enable / Disable setting needs to be set to reconfigure the displays. This can make the Task operation faster by reducing unnecessary commands.*

Example Report: Query basic device information and export to Excel

In this example a report is created that will query basic information about all of the devices in the Device Tree. In order to avoid unnecessarily re-querying devices too often, a report that only queries devices if the information about them is older than two days. This will keep the information in the database up to date.

Once the report has completed, the results are exported to Excel so the data can be used and manipulated externally.

1. Create a new Report by clicking the New Report  toolbar button, or selecting **New Report...** from the **Reports** menu.
2. Enter a **Name** and **Description** for the report to indicate the purpose of the report.

The screenshot shows a dialog box titled "New Report - All Devices". It has a tabbed interface with "Settings", "Devices", "Query Items", "Output", and "Summary" tabs. The "Settings" tab is selected. Inside the dialog, there are three main sections:

- Report Name and Description:** A text box for "Name" containing "All Devices" and an empty text box for "Description".
- Report Type:** Two radio button options: "Database Report" (unselected) with the description "Create a report from the device information in the local database." and "Real-time Report" (selected) with the description "Query the devices to get current information."
- Real-time Report Options:** A checked checkbox "Query only if local device information is older than" followed by a spin box set to "2" and a dropdown menu set to "days".

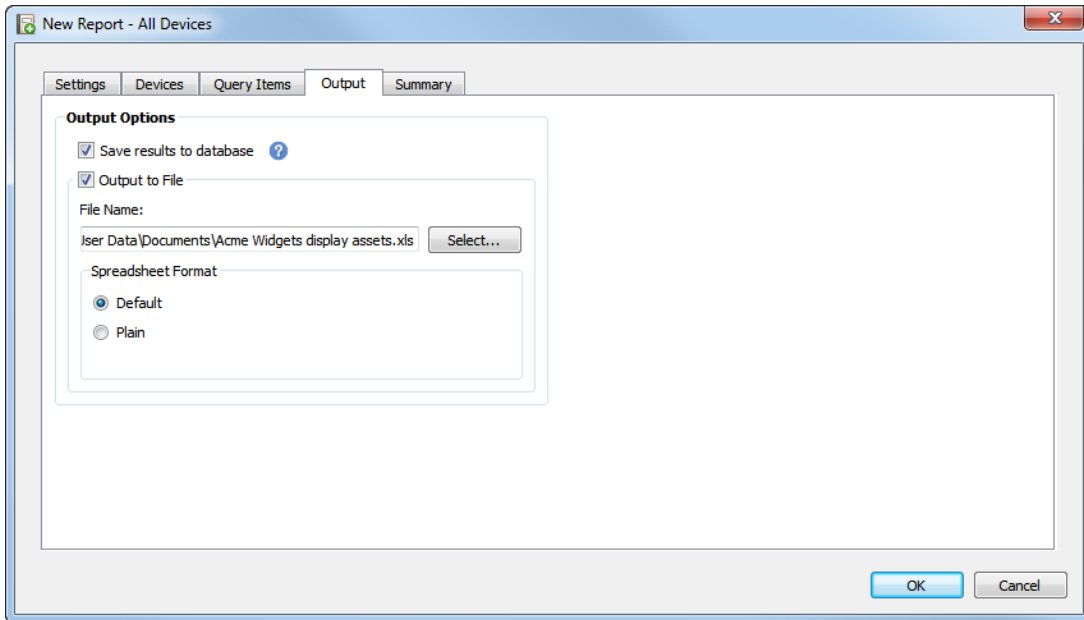
At the bottom right of the dialog are "OK" and "Cancel" buttons.

3. Since the report will actually query devices, select **Real-time Report** as the **Report Type**. Select **Query only if local device information is older than** and select **2 days** in order to avoid unnecessarily re-querying devices and also keep the database up to date.
4. On the **Devices** tab, select the devices to be included in the report.

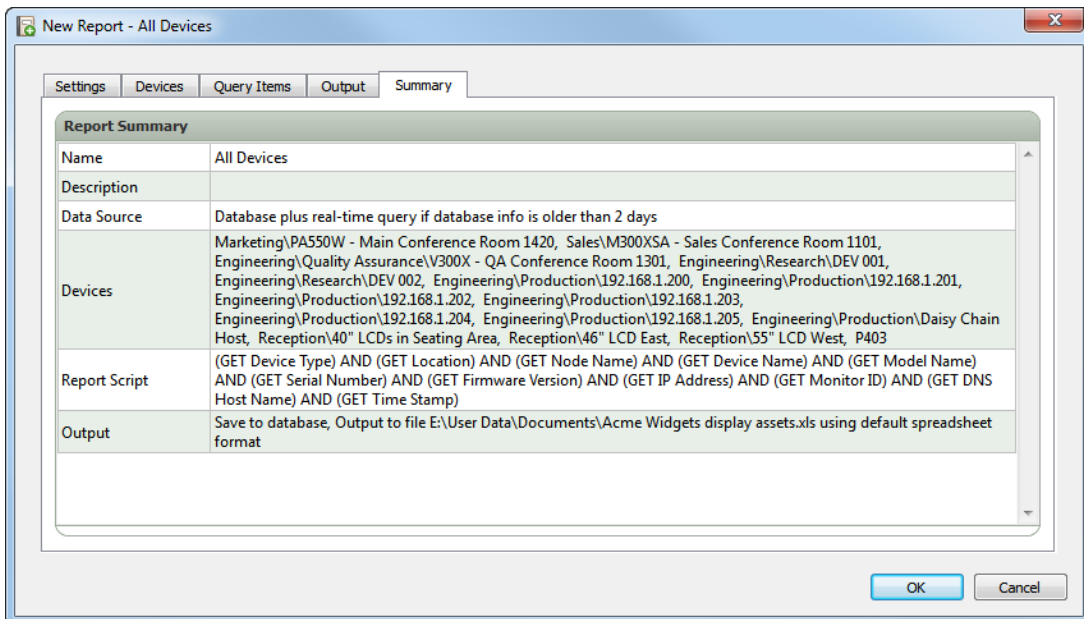
Note: Windows computers and daisy-chained large-screen displays are shown in the device tree in the **Devices** tab without any child devices (attached displays for Windows computers, and individual daisy-chained large-screen displays for daisy-chain hosts). These child devices will be determined when the Report operation is actually run, and automatically added to the report and the device tree.

5. On the **Query Items** tab, select the desired items to query and include in the report.

6. On the **Output** tab select the **Output to file** option, click **Select...** and choose a file type and name.



7. On the **Summary** tab review the Report settings, and click **OK**.

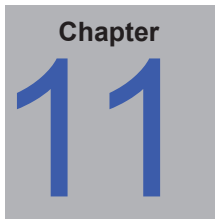


8. There will now be a new report listed in the **Inactive Reports** list.

9. Click the ► **Run** button to start the report. Once the report has completed querying all of the selected devices for which the database information is more than two days old, the spreadsheet will be automatically opened.

The screenshot shows an Excel spreadsheet with the following content:

Acme Widgets display assets.xls				
	A	B	C	D
1				
2	All Devices			
3				
4	Report Information			
5	Name:	All Devices		
6	Description:			
7	File Name:	E:\User Data\Documents\Acme Widgets display assets.xls		
8	Start Time:	5/3/2013 12:29:10 AM		
9	End Time:	5/3/2013 12:29:10 AM		
10	Completion Status:	Completed		
11	Generated By:	NaVIsSet Administrator 2		
12	Version:	Version 2.0.0 (Build 130419)		
13				
14	Report Data			
15	Device Type	Location	Node Name	Device Name
16	Projector	Marketing	PA550W - Main Conference Room 1420	PA550W - Main Conference Room 1420
17	Projector	Engineering\Quality Assurance	V300X - QA Conference Room 1301	V300X - QA Conference Room 1301
18	Computer	Engineering\Research	DEV 002	DEV 002
19	Desktop Display	Engineering\Research	DEV 002	LCD309WQX1



Frequently Asked Questions

Question: Can Task schedules be created with different start times for different days of the week - for example to power on displays at different times on different days?

Answer: Yes. Simply create a Task with the desired Start Schedule times and days of the week to run. Then duplicate that task and edit it to change the start times and other days of the week. Repeat as necessary. So the end result is that there are multiple Tasks performing the same operation, but on different days and start times.

Question: Can two instances of the application share the same NaViSet Administrator database file simultaneously?

Answer: No. The database can only be opened by one instance at any one time.

Question: Can the database used by NaViSet Administrator be accessed by other software?

Answer: No. The database format is proprietary. Device information can be exported via delimited text files and Excel files.

Question: Can RS232 Splitters or Y adapters be used to connect multiple displays?

Answer: No. This will result in communication collisions and is an illegal topology for RS232 communications.

Question: What happens when there is a time change such as DST (Daylight saving time)?

Answer: Tasks that are currently inactive will automatically be rescheduled to take into account the new time from the host computer whenever it is changed. If tasks are running when the time change occurs, a message will be included in the task results indicating the time change.

Question: If the same brightness and color settings are applied to multiple displays will they look exactly the same?

Answer: For most display models, no. Since each display is different due to the age, usage, and normal tolerances, the same color setting values applied to different displays will result in some brightness and/or color differences.

Question: The results of a Task show numerous *Last Query Still Running* warning messages. What does this mean?

Answer: The task has not completed before the next time it is scheduled to poll has been reached. Increase the polling interval time to allow the task to complete on all of the devices specified.

Question: What happens to any scheduled tasks if NaViSet Administrator is closed? Do they need to be rescheduled?

Answer: NaViSet Administrator needs to be running in order for a scheduled task to start and run. If it is not running when a task is scheduled to start, then the task will be rescheduled for the next time period as soon as the application is run again. All tasks are automatically rescheduled whenever NaViSet Administrator is started and do not need to be manually rescheduled, however tasks missed will not be caught up.

Question: How much network bandwidth does NaViSet Administrator use?

Answer: Communications to each device uses a minimal amount of network bandwidth - typically several kilobytes for most operations.

Question: How long would it take to perform an operation on a large number of devices?

Answer: NaViSet Administrator can communicate to multiple different devices in parallel, which speeds up operation by allowing simultaneous connections, and allows more operations to be performed while waiting for other devices to respond to commands. Up to 30 connections can be used by selecting *Maximum simultaneous network connections* in the application *Preferences* (see page 110).

Assuming that all 30 connections are used with the maximum possible efficiency, then operations on all devices will complete at 30 times the speed of performing the operation on all devices in serial using one connection. Depending on the device, connection type, and operation being performed, operation times are typically between 5 seconds to 1 minute.

Example: Approximately how long would it take to power off 1000 displays?

Assuming a power off operation takes 15 seconds to perform on a device, if performed serially using one connection the total time would be about 15 seconds x 1000 = 15000 seconds (over 4 hours). If 30 connections are used, then the time is $15 \times 1000 \div 30 = 500$ seconds (just over 8 minutes). It is assumed that no other operations are being performed at the same time.

Question: Is it possible to connect to a display that is connected via RS232 to the local computer?

Answer: Yes. Install and configure the *LAN to RS232 Bridge* application on the local computer. Add the display to the device tree in the same way as any other device, but use either the computer's actual IP address, network name, or the IP address 127.0.0.1.

Chapter 12 Troubleshooting

Problem: Unable to connect to a Windows Computer via WMI

If an error occurred when performing any *Test* operation, follow these troubleshooting steps:

- Confirm that the remote computer is powered on and fully booted.
- Confirm that the computer name or IP address is correct.
- Confirm that the user credentials entered are correct for an administrative user on the computer or domain administrator.
- Confirm that the Windows Firewall is not blocking access to WMI. See page 48 for more details.
- If the Windows computers on the network are part of a Windows Workgroup and not a Domain, the default UAC (User Account Control) security settings will not allow access to WMI, even if the Firewall is disabled.

Problem: Unable to communicate with an NEC large-screen display

If an error occurred when performing any *Test* operation, follow these troubleshooting steps:

- Confirm that the display is a supported model and is powered on.
- Confirm the IP address of the display is correct. If using the LAN to RS232 Bridge make sure the IP address or host name of the Windows computer is correct.
- Confirm that the Monitor ID being used to connect to a display matches the Monitor ID set on the OSD.
- If using the *LAN to RS232 Bridge* utility, confirm that it is configured correctly and has been started. Confirm that the Windows Firewall has been opened correctly for the Network Location Type being used. See "Troubleshooting the LAN to RS232 Bridge" on page 144.
- Confirm that the first display is correctly configured to use RS232 or LAN, depending on the connection type. See the configuration information starting on page 53 for details.
- For displays daisy-chained via RS232, confirm that displays connected to the first display are configured to use RS232 and have unique Monitor IDs.
- For displays daisy-chained via RS232, confirm that displays are connected using crossover / NULL modem type RS232 cables, and are connected to the correct IN and OUT sockets on the displays.
- For displays daisy-chained via LAN, confirm that the network connection to the first display is connected to the LAN 1 input. The LAN 2 output should connect to the LAN 1 input on the next display in the daisy-chain.
- If the display is connected directly to LAN (not using the *LAN to RS232 Bridge*), try connecting to the display's internal web host using a web browser and enter the IP address of the display to verify connectivity via HTTP.
- Try resetting the LAN settings on the display and reconfiguring. Power Off and On the display.

Problem: Unable to communicate with an NEC projector

If an error occurred when performing any *Test* operation, follow these troubleshooting steps:

- Confirm the IP address of the projector, or IP address or Windows computer name of the Windows computer (if using the *LAN to RS232 Bridge*) is correct.
- If using the *LAN to RS232 Bridge* utility, confirm that it is configured correctly and has been started. See "Troubleshooting the LAN to RS232 Bridge" on page 144.
- If the projector is connected directly to LAN (not using the *LAN to RS232 Bridge*), try connecting to the projector's internal web host using a web browser and enter the IP address of the projector to verify connectivity via HTTP.
- Some projector models require the communications setting to be manually configured between RS232 and LAN via the On Screen Display. Select the appropriate setting for the connection being used.

Appendix

A

Comparison of connection methods for NEC large-screen displays

	Connection Method			
	Direct LAN	LAN to RS232 Bridge	RS232 WMI Provider	DDC/CI WMI Provider
Host Windows Computer Required	No	Yes	Yes	Yes
Operation Speed	Fastest	Fastest	Slowest	Average
RS232 Daisy Chain Supported	Yes	Yes	Yes	No (multi-monitor on computer is supported)
Control when remote host computer is powered down or not functional	N/A	No	No	No
Control without user logged in to remote host computer	N/A	No	Yes	Yes
Use and select any video input	Yes	Yes	Yes	No (Current input only. Must be VGA or DVI.)
Configuration of Monitor IDs and number of displays on host computer	N/A	No configuration necessary	Must be specifically configured on the host computer	No configuration necessary
Maximum cable length	100m	10m	10m	3m
Additional limitations		One COM port supported	Multiple COM ports supported	No splitters, KVMs, or Video over CAT5/6. Two-way communications using DisplayPort or HDMI inputs is <u>not</u> supported.
Supported on SBC (Single Board Computer)	N/A	Yes	Yes	No
IP Address	IP address required for display	Shares IP address of host computer	Shares IP address of host computer	Shares IP address of host computer
Network Security	None	None	Yes. Requires administrator credentials.	Yes. Requires administrator credentials.
Typical Standard Refresh Time	20 seconds per display	20 seconds per display	20 seconds per display + 10 seconds x the total number of displays	30 seconds
Typical Full Refresh Time	120 seconds per display	120 seconds per display	60 seconds per display + 10 seconds x the total number of displays	75 seconds
See connection diagram on	page 53	page 55	page 59	page 46

Daisy Chain RS232 vs. Individual LAN Connections

The following table shows compares connecting large-screen displays individually via LAN vs. using an RS232 daisy chain between displays:

	Connection Method	
	Daisy Chain RS232	Individual LAN Connection
Operation Speed	Slower. Limited to one operation on one display on the daisy chain at a time.	Faster. Simultaneous (parallel) operations to each display (up to maximum limit set in the application Preferences).
IP Addresses	One IP address required for all displays.	One IP address for each display.
Connectivity	Single RS232 cables daisy chained between displays.	Individual LAN cable runs from each display to a hub/switch/router.
Robustness	Failure or removal of one display or cable will disrupt communications to all others further along the daisy chain.	Failure of a display or cable will not impact communications to other displays.

Appendix

B

Wake-on-LAN (WoL) Configuration

In order to wake up a remote computer using the WoL protocol, the computer must be configured to enable the WoL functionality.

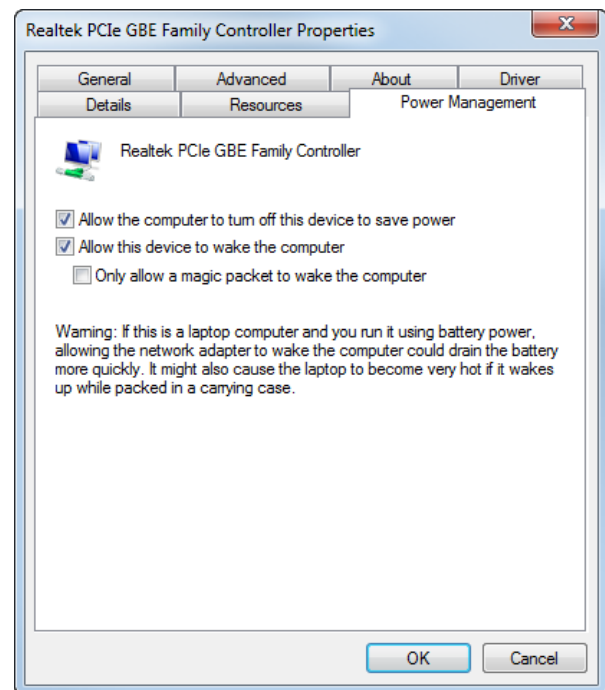
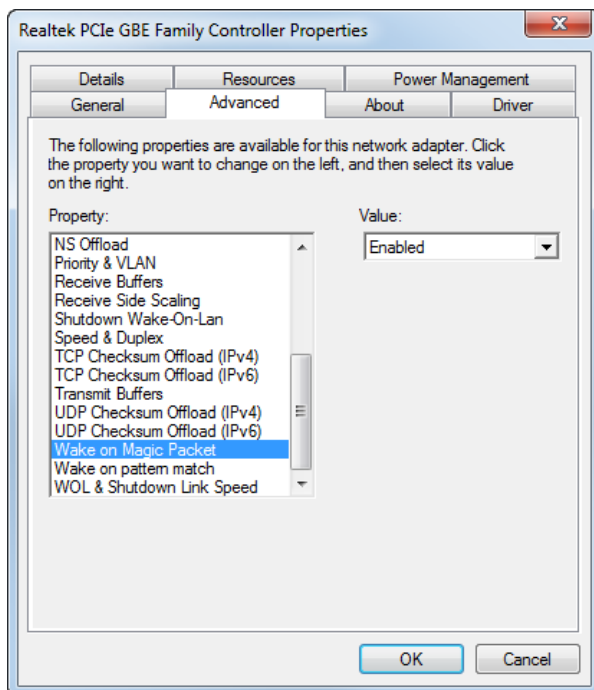
On most computers WoL needs to be enabled in both the BIOS (Basic Input/Output System) settings and in Windows. Consult the computer's documentation for information on how to access and enable the BIOS WoL settings if applicable.

In Windows, the WoL functionality is integrated into the *Device Manager*, and is available in the *Power Management* tab of each network device.

When performing a Wake On LAN operation in *NaViSet Administrator*, a *magic packet* will be broadcast on the network interface selected in the *Preferences* to the MAC address of the computer. The *magic packet* is sent as a UDP datagram on port 9. Be sure that firewalls and routers do not filter or block this.

Note: In most cases WoL will not work outside the local network or current network subnet due to the broadcast nature of the protocol and configuration of most routers.

Examples of network adapter Wake on LAN / Wake On Magic Packet settings:




Appendix

C

Using Open Hardware Monitor


NaViSet Administrator can interface with the free open-source hardware monitoring **Open Hardware Monitor** application in order to provide extended monitoring of a remote Windows computer's hardware status, such as temperatures and fan speeds. These extra parameters on the status of a remote computer can be useful in checking for abnormal conditions such as overheating, or cooling fan failures which could lead to a failure or misoperation of the computer.

 **Note:** Since NaViSet Administrator operates by polling devices, and not by remote devices automatically signaling of an abnormal condition, a Task must be used to periodically query the remote devices being monitored and check for an abnormal condition.

Installing and Configuring Open Hardware Monitor

To use *Open Hardware Monitor* with *NaViSet Administrator*:

1. On the remote Windows computer that is to be monitored, install the **Open Hardware Monitor** application available from <http://openhardwaremonitor.org>.
2. Start the **Open Hardware Monitor** application.
3. In the **Options** menu, configure the application to **Run On Windows Startup**, and if desired to **Start Minimized**.
4. Confirm that the desired parameters are being monitored and reported within the application.
5. Leave the application running.
6. In *NaViSet Administrator*, select the remote Windows computer in the *Device Tree* and open the device's tab by double clicking the device.
7. On the device's **Info** tab click either **Standard Refresh** or **Full Refresh** to refresh the status information from the remote computer.
8. The supported parameters from *Open Hardware Monitor* will appear in the **Computer Status Information** table.

 **Note:** NEC is unable to provide support or assistance with *Open Hardware Monitor*, and is not responsible for its operation, development, functionality, or availability.

Supported Sensors

NaViSet Administrator supports reading CPU, GPU, and Main Board temperatures and fan speeds from *Open Hardware Monitor*. Since *Open Hardware Monitor* supports monitoring of a broad range of sensor types within the computer, devices are grouped into the following categories:

- CPU Temperatures 1 thru 8 in °C
- CPU Fan Speeds 1 thru 8 in RPM
- Main Board Temperatures 1 thru 8 in °C
- Main Board Fan Speeds 1 thru 8 in RPM

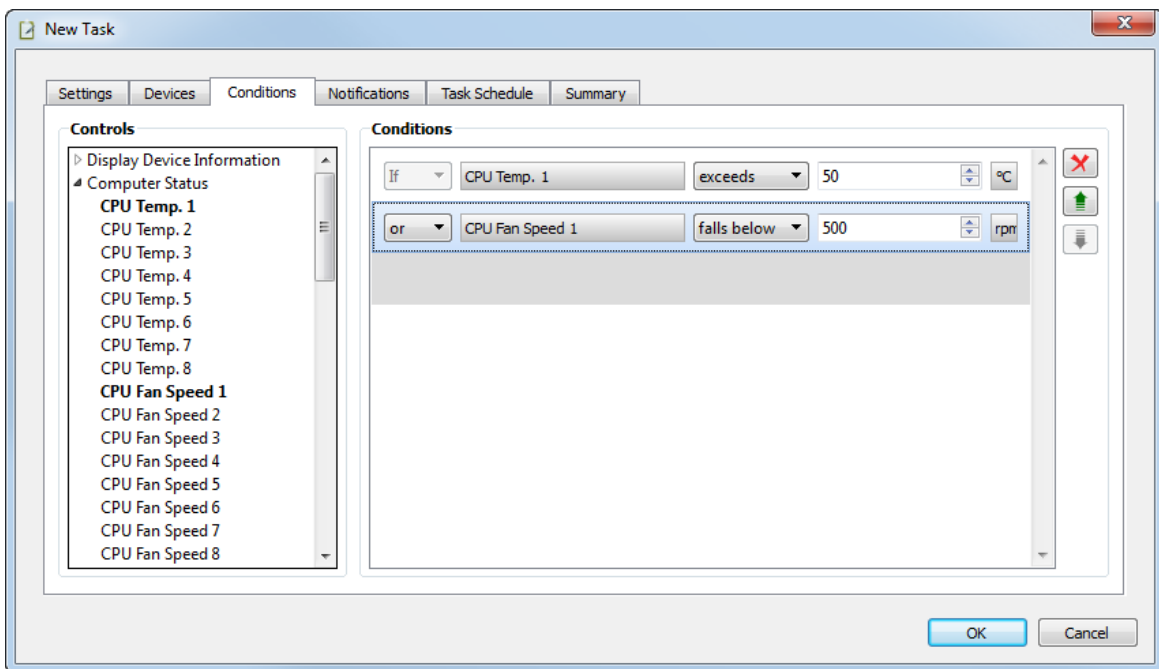
- GPU Temperatures 1 thru 8 in °C
- GPU Fan Speeds 1 thru 8 in RPM

Using in Tasks and Reports

The sensor values from *Open Hardware Monitor* can be used in *Tasks* and *Reports* in NaViSet Administrator. For example a *Task* can be created to issue an alert if a fan speed drops below a certain RPM, or if a temperature exceeds a certain value.

When a computer is selected as a device in a *Conditional* type *Task*, the list of Controls in the conditions will contain a section called *Computer Status*, which contains all of the sensor categories that can be used from *Open Hardware Monitor*.

In the following example the CPU Temperature 1 sensor is used to create an alert of the value exceeds 50°C, or of the CPU 1 fan speed falls below 500 rpm.





LAN to RS232 Bridge Configuration

About

The *LAN to RS232 Bridge* is a utility that allows remote access via LAN to NEC large-screen displays or projectors that are connected to a remote computer via an RS232 connection. This essentially makes the Windows computer appear to be the LAN connection of a large-screen display or projector. It is *bridging* communications between LAN and the RS232 port to the display. Applications like *NaViSet Administrator* can then access displays by connecting to the IP address of the Windows computer, and sending requests just as if the display was connected via a built-in LAN connection.

This allows a host computer to effectively share its LAN connection with the display, allowing remote access to the display via LAN, but while only using one LAN connection.

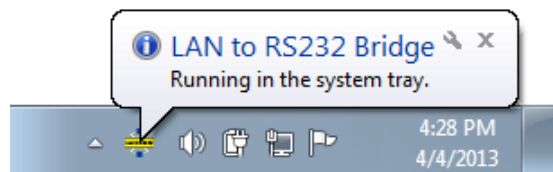
This is useful for:

1. Large-screen display and projector models that have an RS232 connection, but no built-in LAN connection.
2. Situations where it is not possible or desirable to use two LAN connections and IP addresses (one for the host computer and one for the display).

See pages 55, 63, and 66 of the *Configuring Devices* chapter for complete information on connecting and configuring devices for use with the *LAN to RS232 Bridge*.

Operation

The utility runs in the Windows *System Tray* and waits for incoming requests via LAN. When a request is received, it is then forwarded on to the selected RS232 COM port to the display. Replies from the display(s) are then sent back over LAN.



Note: Windows may hide the system tray icon by default. Click the **Show Hidden Icons** button in the system tray to configure which icons are shown on the system tray.

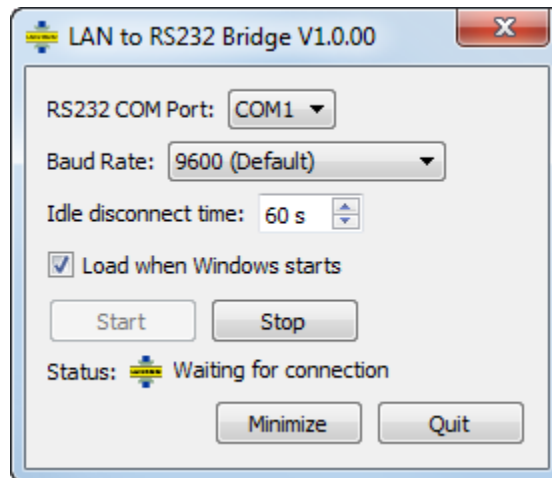
Limitations

There are several important limitations to using this utility:

1. The application runs in the Windows System Tray, and only loads when a user has logged into the computer. Therefore connectivity to the display will not be available until a user has logged in.
2. Since the application settings are stored on a per-user basis, be sure to configure the settings while logged in as the user that will be normally logged into the computer.
3. Communications will not be possible while the host computer is in power off, sleep, or hibernate modes.
4. Only one COM port can be used. If multiple large-screen displays are to be connected, they must be daisy-chained from the RS232 OUT on the first display connected to the computer.
5. Only one simultaneous remote connection is allowed. If a connection request is received while another connection is already in use, it will be refused.
6. The host computer must allow TCP LAN traffic on port 7142. Firewalls must be configured to allow unfiltered traffic on this port. The installer will automatically open this port on the Windows firewall.

Configuring the LAN to RS232 Bridge

1. Install the **LAN to RS232 Bridge** from the NaViSet Administrator 2 installer packages.
2. Run the **LAN to RS232 Bridge** application which can be found in the **Start** → **Programs** → **NEC Display Solutions** → **LAN to RS232 Bridge** menu.

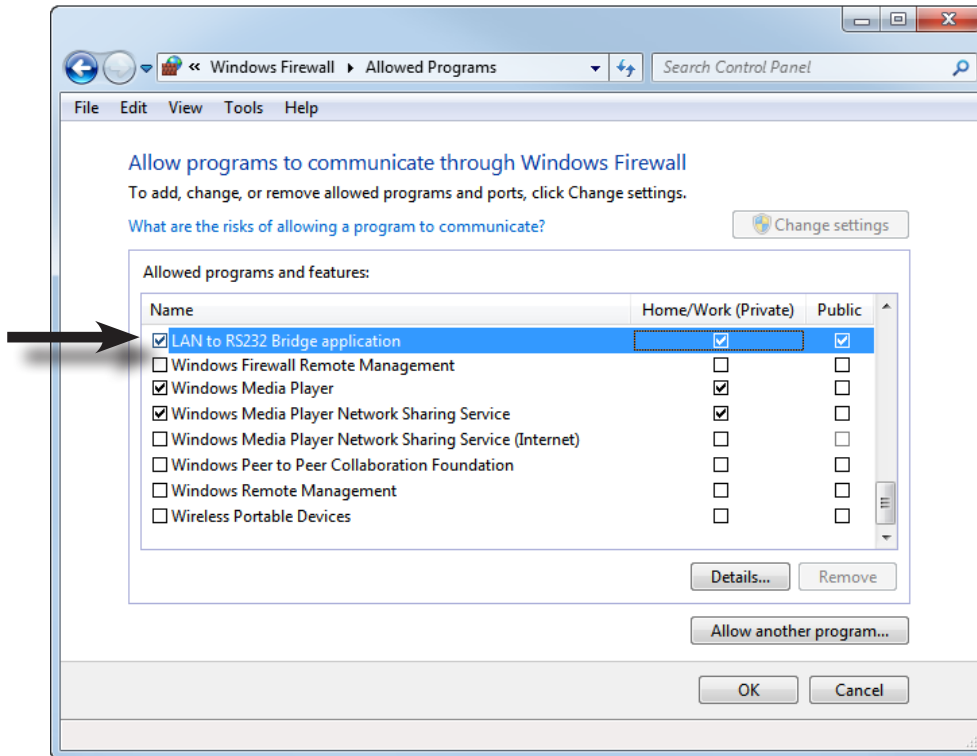


3. Select the **RS232 COM Port** that the display is connected to from the list.
4. Select the correct **Baud Rate** for the connected display. All NEC large-screen displays use 9600 baud. Projectors can use 9600, 19200, or 38400 baud. Be sure the baud rate selected matches the baud rate configured in the projector's On Screen Display.
5. To automatically load the LAN to RS232 Bridge application when Windows starts, select **Load when Windows starts**. If this is not selected, it must be manually started each time Windows starts.
6. Click **Start** to start the bridge operation. It will listen for incoming connections on LAN. When a connection is received, the **Status:** indicator will change from **Waiting for connection**.
7. When finished configuring the settings, click the **Minimize** button to close the window and keep the application running in the system tray.
8. Clicking **Quit** will close the application and it will no longer accept incoming connections.

Troubleshooting the LAN to RS232 Bridge

Follow these troubleshooting steps if problems are encountered with connecting to the LAN to RS232 Bridge utility:

1. Test the connection and configuration by connecting from another computer using the IP address of the computer running the LAN to RS232 Bridge utility.
2. Check that the utility has been started.
3. Watch the **Status**: in the configuration window. It will show if a remote connection has been attempted. If no remote connection is made, check the firewall settings. The application is listed in the *Windows Firewall* as *LAN to RS232 Bridge Application*. Make sure it has permissions on the *Network Location Type* being used for the remote network connection. Network Location Types are typically *Home/Work (Private)* and *Public*.



4. Large-screen displays only: Check that the display has been configured to use the RS232 connection and not LAN.
5. Large-screen displays only: Check that the Monitor ID is set correctly on the display.
6. Large-screen displays only: Check that the RS232 cable is connected to the RS-232C INPUT on the display.
7. Make sure the selected *Baud Rate* is selected is correct for the display type and model being used.
8. Check that the RS232 cable to the display is a crossover cable type and is connected to the RS232 input on the display.
9. Check that another application isn't using the COM port.

Appendix

E

RS232 WMI Provider Configuration

About

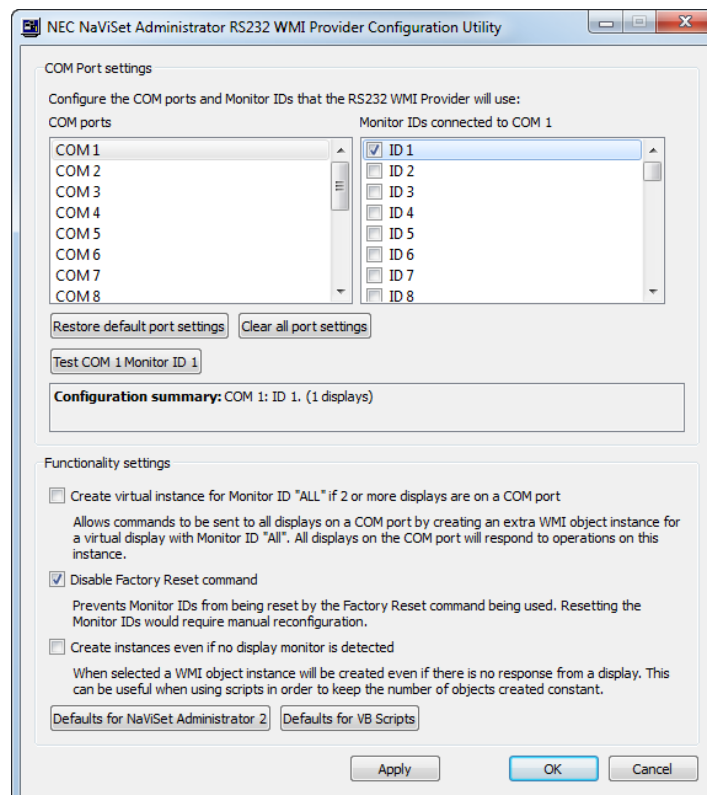
The *RS232 WMI Provider* is installed on remote computers that have compatible NEC large-screen displays with an RS232 communications (COM) port. It will receive queries and commands from the NaViSet Administrator application via WMI, and communicate these commands to the display via RS232. The WMI Provider is a supplier, or *provider*, of the monitor metadata information to the NaViSet Administrator application. It is a completely background process that gets loaded temporarily whenever a request or command is received and therefore has no interaction with the users on the remote computers.

Note: *There are several different methods of accessing NEC large-screen displays remotely. Please see Appendix A on page 137 which provides a comparison of the different types, their benefits and drawbacks. Using the RS232 WMI Provider with a large number of displays connected can result in slow operation since connectivity with each display must be confirmed before a command can be performed, and is therefore not recommended.*

Configuring

Unlike the *LAN to RS232 Bridge* utility, the *RS232 WMI Provider* must be locally configured with the number of displays connected, the Monitor IDs for each display, and the RS232 COM port(s) on the host computer to use.

A utility application called *RS232 WMI Provider Configuration Utility* is installed with the RS232 WMI Provider to allow these configurations to easily be made. This is accessed from the Start → Programs → NEC Display Solutions → RS232 WMI Provider menu.



The configuration utility is used to make the following configuration settings used by the WMI Provider:

1. Configuring the RS232 COM ports used to communicate with the NEC display(s).
2. Configuring the Monitor IDs to use with each display (which must match the settings on each display)
3. Testing the communications with each display.
4. Configuring various advanced settings that impact the behavior of the WMI Provider.

Follow these steps to plan and configure the settings for use with NaViSet Administrator:


1. Identify the COM port numbers on the host computer that will be used to communicate with the display(s).
2. Connect the display(s) to the host computer using RS232 crossover cables. Be sure to correctly identify the RS232 IN and OUT connections on the display. The computer will connect to the RS232 IN on the display.
3. Configure the Monitor IDs for each display using the On Screen Display on each. If multiple displays are being used with an RS232 daisy-chain connection, then each display on the chain must have a unique Monitor ID.
4. In the configuration utility application click the **Clear All Port Settings** buttons to reset any previous configurations.
5. Select the COM port being used on the host computer in the list.
6. Next select the Monitor ID for the first display and make sure it is checked.
7. Click the **Test COM n Monitor ID x** button to test the communications with the display (where *n* and *x* are the COM port number and Monitor ID). If the communications is successful, the model name and serial number of the display will be shown. See *"Troubleshooting"* on page 135 if the display is not detected.
8. Repeat steps 5 thru 7 for all remaining displays.
9. Verify the configuration settings in the **Configuration Summary** section.
10. If the WMI Provider is being used with the NaViSet Administrator 2 application, make sure the **Defaults for NaViSet Administrator 2** is selected.
11. Click **Apply** or **OK** to close.
12. The RS232 WMI Provider is now ready for access by remote. Try connecting by adding the computer as a **Windows computer on LAN (WMI)** in the NaViSet Administrator application.

Advanced Settings

The RS232 WMI Provider has several advanced settings for use in certain configurations and scenarios.

Create virtual instance for Monitor ID “All” if two or more displays are on a COM port

This setting allows commands to be simultaneously sent to all displays on a particular COM port by creating an extra WMI object instance for a virtual display with Monitor ID “All”. All the displays on the COM port will respond to operations on this instance.


 **Note:** This setting is intended for use with WMI scripts, and not the NaViSet Administrator 2 application. It should not be selected when using the NaViSet Administrator 2 application.

Disable Factory Reset Command

This setting prevents the Monitor IDs assigned to each display from being reset by the Factory Reset command being used. Resetting the Monitor IDs would require that each display be manually re-configured via the On Screen Display.

Create instances even if no display monitor is detected

When this setting is selected, a WMI object instance will be created for each display configured in the WMI provider, even if there is no response from a display. This can be useful when using WMI scripts, because it keeps the total number and sequence of the WMI objects created constant.

 **Note:** This setting is intended for use with WMI scripts, and not the NaViSet Administrator 2 application. It should not be selected when using the NaViSet Administrator 2 application.



Windows Management Instrumentation

About WMI

Windows Management Instrumentation (WMI) provides fully integrated operating system support for system and applications management on a Windows computer. WMI provides a model of the configuration, status, and operational aspects of Windows operating systems, assisting management applications in creating solutions that reduce the maintenance and life cycle costs of managing Windows and hardware devices.

NaViSet Administrator is able to access a remote computer and read this information using WMI.

Without installing any additional software on a remote computer, NaViSet Administrator is able to report about many different items such as:

- Connected primary display monitor make, model, serial number, and resolution
- Make, model and serial number of the computer (if available)
- CPU type, speed and current usage
- Operating system version and service pack
- System memory size and current usage

NaViSet Administrator is able to enhance the amount of information available on the connected display monitors on a remote computer by installing a custom WMI Provider.

NaViSet Administrator WMI Providers

Two different WMI Providers are included with NaViSet Administrator; the *RS232 WMI Provider* (used for large-screen displays connected to the computer via RS232), and the *DDC/CI WMI Provider* (used for desktop displays and communicates using the video cable to the display).

 **Note:** *The RS232 and DDC/CI WMI Providers cannot both be installed at the same time on a computer.*

The NaViSet Administrator WMI Providers should be installed on all remote computers that have compatible NEC display monitors. The WMI Provider receives queries and commands from the NaViSet Administrator application, via WMI, and communicates these commands to the display via DDC/CI or RS232. The WMI Provider is a supplier or provider of the monitor metadata to the NaViSet Administrator application. It is a completely background process that gets loaded temporarily whenever a request or command is received and has no direct interaction with the users on the remote computers.

In order to perform adjustments and advanced query functions, it is necessary to install one of the NaViSet Administrator WMI Provider on each remote Windows computer. If the WMI Provider is not installed, then NaViSet Administrator can still gather basic information about the main display connected to the computer by using standard built-in WMI classes. This information is limited to static metadata and so no adjustment of the display is possible. This basic information is available regardless of the model or make of display connected.

The NEC WMI Providers create a standard WMI Object that can be accessed not only from the NaViSet Administrator application, but also 3rd party asset management applications and also several other WMI interfaces such as VB Scripts.



WMI VB Scripts

The DDC/CI and RS232 WMI Providers included with NaViSet Administrator allow connected NEC desktop and large-screen displays to be accessed and controlled using 3rd party asset management applications, and also via simple VB Scripts. This makes it very easy to perform custom operations if necessary, without the need to use the NaViSet Administrator application.

VB Scripts can be written to access the WMI **Properties** and **Methods** of the NaViSet Administrator WMI Providers. The WMI provider is a class called `Win32_AdvancedDesktopMonitor`, and exists in the `Root\CIMV2` namespace.

The various **Properties** and **Methods** available can be easily explored using either the Windows built-in WMI Tester application (`WbemTest.exe`), or the WMI CIM Studio and WMI Object Browser available in the Microsoft WMI SDK, or various 3rd party WMI tools.

Once the names and parameters of the desired **Properties** and **Methods** of the WMI Provider are known, they can then be accessed via a VB Script file.

VB Scripts are text files with a `.vbs` extension and can be run either from the command line using `cscript.exe`, or via the Windows GUI which runs `wscript.exe`.

Details of generating VB Scripts are beyond the scope of this manual. However several sample VB Script files are provided for reference on the NaViSet Administrator install media.

Sample VB Script files included:

`MonitorPowerOn.vbs`

Demonstrates how to control the monitor power by turning the monitor on.

`MonitorPowerOff.vbs`

Demonstrates how to control the monitor power by turning the monitor off.

`MonitorInfo.vbs`

Demonstrates how to read the WMI Properties to query and display some of the basic monitor metadata such as model number, serial number, date of manufacture etc. Most of this functionality is only available for displays when using the DDC/CI WMI Provider.

`ResetColor.vbs`

Demonstrates how to perform an action by calling a WMI Method. This will reset the monitor color settings.

`ReadBrightContrast.vbs`

Demonstrates how to perform an action by calling a WMI Method. This will read the values of the Brightness and Contrast controls and display them as a percentage value.

`SetMonitorBrightness.vbs`

Demonstrates how to perform an action by calling a WMI Method. This will set the display Brightness control to a percentage value. It will also display the Brightness control percentage value before and after the adjustment.

`IRRemote.vbs`

Demonstrates how to perform an action by calling a WMI Method. This will send a series of IR Remote commands to the display mimicking the IR Remote control (if available). The file should be edited to set the desired IR Remote

commands. This functionality is only available on NEC large-screen displays connected via RS232.

`ReadInternalTempSensors.vbs`

Demonstrates how to read the internal temperature sensors in supported displays.

Glossary

DDC/CI (Display Data Channel / Command Interface) - A two-way communications link between the video graphics adapter and display monitor using the standard video signal cable.

EDID (Extended Display Identification Data) - A data structure provided by a display to describe its capabilities to a video source.

OPS (Open Pluggable Specification) - A standardized slot design for digital signage devices and pluggable media players.

OSD (On Screen Display) - Display controls and status information superimposed on the screen image.

RS232 - A series of standards for serial binary single-ended data and control signals connecting between DTE (data terminal equipment) and DCE (data circuit-terminating equipment).

SBC (Single Board Computer) - A complete computer built on a single circuit board, with microprocessor, memory, and other features.

SMTP (Simple Mail Transfer Protocol) - An Internet standard for electronic mail (email) transmission across Internet.

SSL/TLS (Secure Sockets Layer / Transport Layer Security) - A protocol for encrypting information over the Internet.

USB (Universal Serial Bus) - A communication bus used to connect up to 127 devices such as keyboards, mice, scanners, color sensors, etc.

VESA (Video Electronics Standards Association) - An international non-profit corporation that supports and sets industry-wide interface standards for the PC, workstation, and consumer electronics industries.

WMI (Windows Management Instrumentation) - A set of extensions to the Windows Driver Model that provides an operating system interface through which instrumented components provide information and notification.



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